DRAFT

SHARP
SERVICE MANUAL

S15R256KB5121

COOKTOP
WITH
MICROWAVE DRAWER

KB-5121KS pictured

MODELS

KB-5121KS
KB-5121KK
KB-5121KW

WARNING TO SERVICE PERSONNEL:
This service manual is intended for use by persons having electrical and mechanical training and a level of knowledge of these subjects generally considered acceptable in the appliance repair trade. Sharp Electronics Corporation cannot be responsible, nor assume any liability, for injury or damage of any kind arising from the use of this manual.

Microwave ovens contain circuitry capable of producing very high voltage and current. Contact with the following parts may result in a severe, possibly fatal, electrical shock. (High Voltage Capacitor, High Voltage Power Transformer, High Voltage Rectifier and Heat sink etc., and Magnetron, High Voltage Harness etc..)

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SHARP ELECTRONICS CORPORATION

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PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(a) Do not operate or allow the oven to be operated with the door open.
(b) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary: (1) interlock operation, (2) proper door closing, (3) seal and sealing surfaces (arcing, wear, and other damage), (4) damage to or loosening of hinges and latches, (5) evidence of dropping or abuse.
(c) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.
(d) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
(e) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

BEFORE SERVICING

Before servicing an operative unit, perform a microwave emission check as per the Microwave Measurement Procedure outlined in this service manual.
If microwave emissions level is in excess of the specified limit, contact SHARP ELECTRONICS CORPORATION immediately @1-800-237-4277.

If the unit operates with the door open, service person should 1) tell the user not to operate the oven and 2) contact SHARP ELECTRONICS CORPORATION and Food and Drug Administration's Center for Devices and Radiological Health immediately.

Service personnel should inform SHARP ELECTRONICS CORPORATION of any certified unit found with emissions in excess of 4mW/cm^2. The owner of the unit should be instructed not to use the unit until the oven has been brought into compliance.

WARNING TO SERVICE PERSONNEL

Range units contain circuitry capable of producing very high voltage and current, contact with following parts may result in a severe, possibly fatal, electrical shock.

(Example)

High Voltage Capacitor, High Voltage Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness, Heating Elements, etc..

Read the Service Manual carefully and follow all instructions.

Before Servicing

1. Disconnect the power source, and then remove unit.
2. Open the drawer and keep it open.
3. Discharge high voltage capacitor.

WARNING: RISK OF ELECTRIC SHOCK. DISCHARGE THE HIGH-VOLTAGE CAPACITOR BEFORESERVICING.

The high-voltage capacitor remains charged about 60 seconds after the oven has been switched off. Wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

Whenever troubleshooting is performed the power supply must be disconnected. It may, in some cases, be necessary to connect the power supply after the outer case has been removed, in this event:

1. Disconnect the power source, and then remove neccessary covers.
2. Open the drawer and keep it open.
3. Discharge high voltage capacitor.
4. Disconnect the leads to the primary of the power transformer.
5. Ensure that the leads remain isolated from other components and oven chassis by using insulation tape.
6. After that procedure, reconnect the power source.

When the testing is completed,

1. Disconnect the power source, and then remove covers.
2. Open the drawer and keep it open.
3. Discharge high voltage capacitor.
4. Reconnect the leads to the primary of the power transformer.
5. Reinstall the covers.
6. Reconnect the power source.
7. Run the unit and check all functions.

After repairing

1. Reconnect all leads removed from components during testing.
2. Reinstall the covers.
3. Reconnect the power supply cord.
4. Run the oven and check all functions.

Microwave ovens should not be operated empty. To test for the presence of microwave energy within a cavity, place a cup of cold water on the oven tray, close the drawer and set the power to HIGH and set the microwave timer for two (2) minutes. When the two minutes has elapsed (timer at zero) carefully check that the water is now hot. If the water remains cold carry out **Before Servicing** procedure and re-examine the connections to the component being tested.

When all service work is completed and the oven is fully assembled, the microwave power output should be checked and a microwave leakage test should be carried out.

SAFE SERVICING PRACTICES

To avoid personal injury and/or property damage, it is important that Safe Servicing Practices be observed. The following are some limited examples of safe practices:

1. DO NOT attempt a product repair if you have any doubts as to your ability to complete it in a safe and satisfactory manner.

2. Before servicing or moving an appliance:
   - Disconnect the power source by tripping the circuit breaker to the OFF position, then disconnecting the wiring.

3. Never interfere with the proper operation of any safety device.

4. USE ONLY REPLACEMENT PARTS CATALOGED FOR THIS APPLIANCE. SUBSTITUTIONS MAY DEFEAT COMPLIANCE WITH SAFETY STANDARDS SET FOR HOME APPLIANCES.

5. GROUNDING : The standard color coding for safety ground wires is GREEN , or GREEN with YELLOW STRIPES . Ground leads are not to be used as current carrying conductors. It is EXTREMELY important that the service technician reestablish all safety grounds prior to completion of service. Failure to do so will create a hazard.

6. Prior to returning the product to service, ensure that:
   - All electrical connections are correct and secure
   - All electrical leads are properly dressed and secured away from sharp edges, high-temperature components, and moving parts
   - All non-insulated electrical terminals, connectors, heaters, etc. are adequately spaced away from all metal parts and panels
   - All safety grounds (both internal and external) are correctly and securely connected
   - All panels are properly and securely reassembled

ATTENTION!!!

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MICROWAVE MEASUREMENT PROCEDURE

A. Requirements:

1) Microwave leakage limit (Power density limit): The power density of microwave radiation emitted by a microwave oven should not exceed 1mW/cm^2 at any point 5cm or more from the external surface of the oven, measured prior to acquisition by a purchaser, and thereafter (through the useful life of the oven), 5 mW/cm^2 at any point 5cm or more from the external surface of the oven.
2) Safety interlock switches:
   Primary interlock relay switch shall prevent microwave radiation emission in excess of the requirement as above mentioned. Secondary interlock relay and door sensing switch shall prevent microwave radiation emission in excess of 5 mW/cm2 at any point 5cm or more from the external surface of the oven.

B. Preparation for testing:
Before beginning the actual measurement of leakage, proceed as follows:
1) Make sure that the actual instrument is operating normally as specified in its instruction booklet.

Important:
Survey instruments that comply with the requirement for instrumentation as prescribed by the performance standard for microwave ovens, 21 CFR 1030.10(c)(3)(i), must be used for testing.

2) Place the load of 275±15 ml (9.8 oz) of tap water initially at 20±5^{O}C (68^{O}F) in the center of the oven cavity.
   The water container shall be a low form of 600 ml (20 oz) beaker with an inside diameter of approx. 8.5 cm (3-1/2 in.) and made of an electrically nonconductive material such as glass or plastic.
   The placing of this standard load in the oven is important not only to protect the oven, but also to insure that any leakage is measured accurately.
3) Set the cooking control on Full Power Cooking Mode.
4) Close the drawer and select a cook cycle of several minutes. If the water begins to boil before the survey is completed, replace it with 275 ml of cool water.

C. Leakage test:

Closed-drawer leakage test (microwave measurement):
1) Grasp the probe of the survey instrument and hold it perpendicular to the gap between the drawer and the body of the oven.
2) Move the probe slowly, not faster than 1 in./sec. (2.5 cm/sec.) along the gap, watching for the maximum indication on the meter.
3) Check for leakage at the drawer screen, sheet metal seams and other accessible positions where the continuity of the metal has been breached (eg., around the switches, indicator, and vents).
   While testing for leakage around the drawer, pull the drawer away from the front of the oven as far as is permitted by the closed latch assembly.
4) Measure carefully at the point of highest leakage and make sure that the highest leakage is no greater than 4mW/cm^2, and that the primary interlock switch/secondary interlock relay does turn the oven OFF before any door movement.

NOTE: After servicing, record data on service invoice and microwave leakage report.

NOTES

SERVICE MANUAL

SHARP

COOK TOP
WITH
MICROWAVE DRAWER

KB-5121KS / KB-5121KK / KB-5121KW

FOREWORD

This Manual has been prepared to provide Sharp Electronics Corp. Service Personnel with Operation and Service Information for the SHARP COOK TOP WITH MICROWAVE DRAWER, KB-5121KS/JK/JW.

It is recommended that service personnel carefully study the entire text of this manual so that they will be qualified to render satisfactory customer service.

Check the interlock switches and the door seal carefully. Special attention should be given to avoid electrical shock and microwave radiation hazard.

WARNING

Never operate the oven until the following points are ensured.
(A) The door is tightly closed.
(B) The door brackets and hinges are not defective.
(C) The door packing is not damaged.
(D) The door is not deformed or warped.
(E) There is not any other visible damage with the oven.

Servicing and repair work must be carried out only by trained service personnel.

DANGER

Certain initial parts are intentionally not grounded and present a risk of electrical shock only during servicing. Service personnel - Do not contact the following parts while the appliance is energized;
High Voltage Capacitor, Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness;
If provided, Vent Hood, Fan assembly, Cooling Fan Motor.

All the parts marked "*" on parts list are used at voltages more than 250V.

Removal of the outer wrap gives access to voltage above 250V.

All the parts marked "Δ" on parts list may cause undue microwave exposure, by themselves, or when they are damaged, loosened or removed.

SHARP ELECTRONICS CORPORATION

SHARP PLAZA, MAHWAH,
NEW JERSEY 07430-2135

PRODUCT DESCRIPTION
POWER CONNECTION
ANTI-TIP DEVICE
SCHEMATICS
TEST PROCEDURE
TOUCH CONTROL PANEL
COMPONENT REPLACEMENT
AND ADJUSTMENT PROCEDURE
WIRING DIAGRAM
PARTS LIST

COOK TOP SPECIFICATION

ITEM	DESCRIPTION
Power Requirements	120 /208 - 120/240Volts / 46/50 Amperes 60 Hertz Single phase, 3 wire grounded
Cook Top Heating Elements	Two 6" - 1200W One 8" - 2000W One 6"/9" - 1200/2400W One 6" - 100W
Control Complement	Touch Navigation System Clock (1:00 - 12:59) Timer (0 - 99 min. 99 seconds) Kitchen Timer, Cooktop Warm, Stop/Clear,

MICROWAVE DRAWER SPECIFICATION

ITEM	DESCRIPTION
Power Output	1000 watts (IEC TEST PROCEDURE) Operating frequency of 2450MHz
Cooking Cavity Dimensions 1.0 Cubic Feet	Width 17-11/32 Height 5-7/8" Depth 17-1/8"
Control Complement	Touch Navigation System Clock (1:00 - 12:59) Timer (0 - 99 min. 99 seconds) Microwave Power for Variable Cooking Repetition Rate; P-HI ..... Full power throughout the cooking time P-90 ..... approx. 90% of Full Power P-80 ..... approx. 80% of Full Power P-70 ..... approx. 70% of Full Power P-60 ..... approx. 60% of Full Power P-50 ..... approx. 50% of Full Power P-40 ..... approx. 40% of Full Power P-30 ..... approx. 30% of Full Power P-20 ..... approx. 20% of Full Power P-10 ..... approx. 10% of Full Power P-0 .....No power throughout the cooking time Kitchen Timer, Cooktop Warm, Stop/Clear, Start, Start, Minute Plus, OPEN, CLOSE.
Oven Cavity Light	Yes
Safety Standard	UL Listed FCC Authorized DHHS Rules, CFR, Title 21, Chapter 1, Subchapter J

POWER CONNECTION

SELECTING 208 OR 240 VOLT CONNECTION

This appliance can be set for 208V or 240V. The voltage setting for your appliance is pre-set at 240V from the factory. Follow these steps to change the voltage setting.

1. Locate the voltage switch on the left side of the appliance (facing the front). See Figure 1.
2. Remove the screw and rotate the switch plate 180˚ as indicated in the Figure 2.
3. Reinsert the switch plate and replace screw as indicated in Figure 3. The voltage setting is indicated by the visible marking.

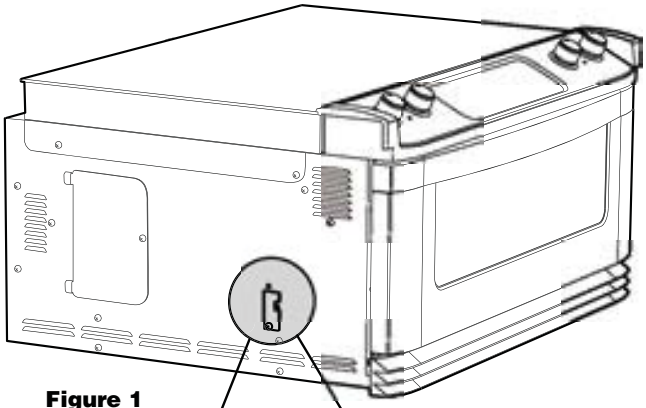


Figure 1

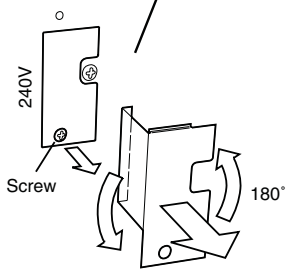


Figure 2

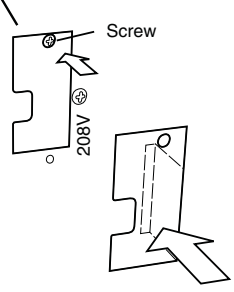


Figure 3

Note: This appliance must be properly grounded

Attention Installer: This appliance must be hard wired (direct wired) into an approved junction box. A plug and receptacle is NOT permitted on this product.

4-WIRE CONNECTION

When installing to a 4-wire electrical system, new construction, mobile home and recreational vehicle or when local codes do not permit grounding through neutral.

1. Disconnect the power supply.
2. In the junction box connect the appliance and residence cable wires as shown in Figure 4.

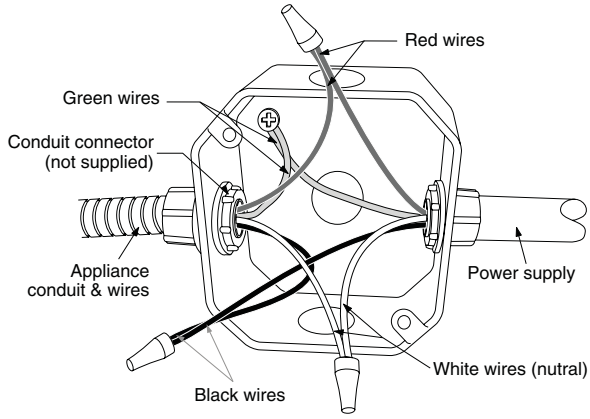


Figure 4

3-WIRE CONNECTION

When local codes permit connecting the cabinet-grounding conductor to the neutral (white) wire.

1. Disconnect the power supply.
2. In the junction box connect the appliance and residence cable wires as shown in Figure 5.

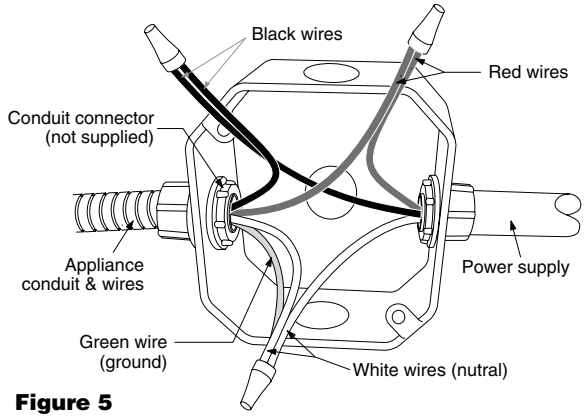


Figure 5

REINSTALL JUNCTION BOX COVER

Do not shorten the flexible conduit. The conduit strain relief clamp (supplied by installer) must be securely attached to the junction box and the flexible conduit must be securely attached to the clamp. If the flexible conduit will not fit with the junction box, do not install the appliance until a clamp of proper size has been obtained.

ADJUST ANTI-TIP BRACKET

Measure the thickness of the counter. See Figure 6. Locate the Anti-Tip Bracket on the backside of the appliance. See Figure 7. Loosen screws and adjust space between the glass cooktop and bracket to match the counter thickness plus 1/16". See Figure 8. Tighten the screws to secure the bracket at the correct counter height dimension.

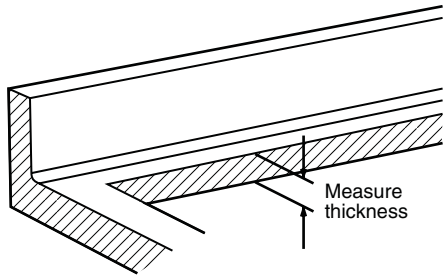


Figure 6

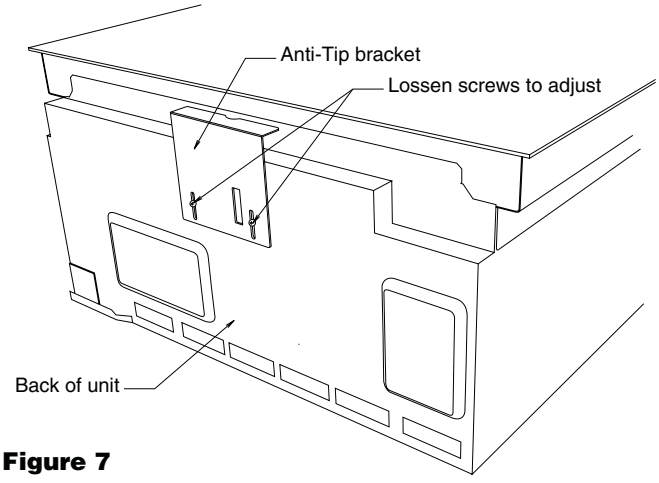


Figure 7

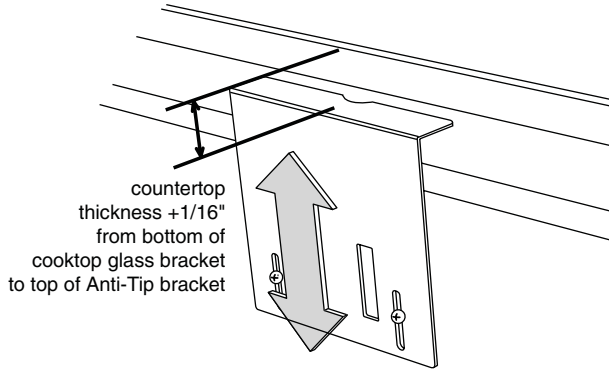
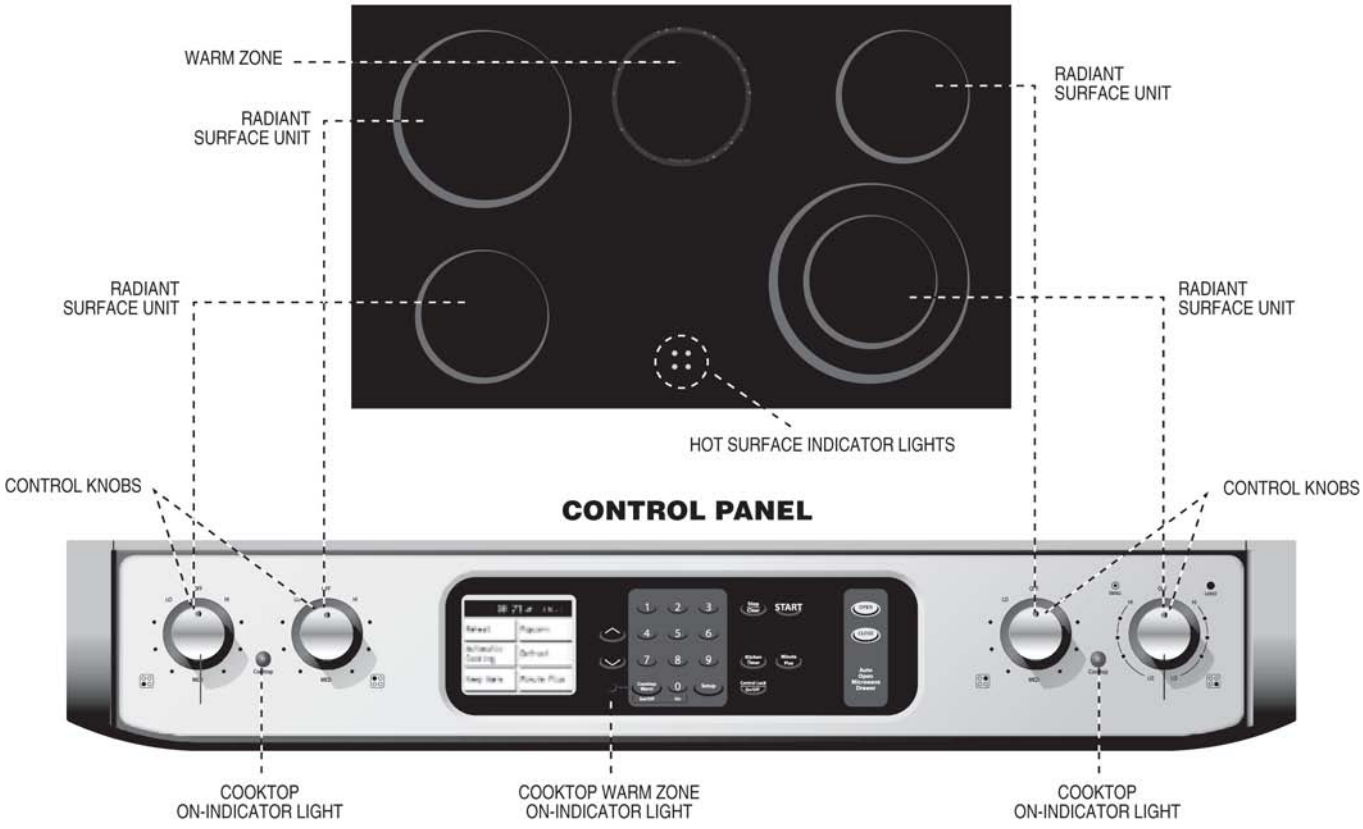


Figure 8

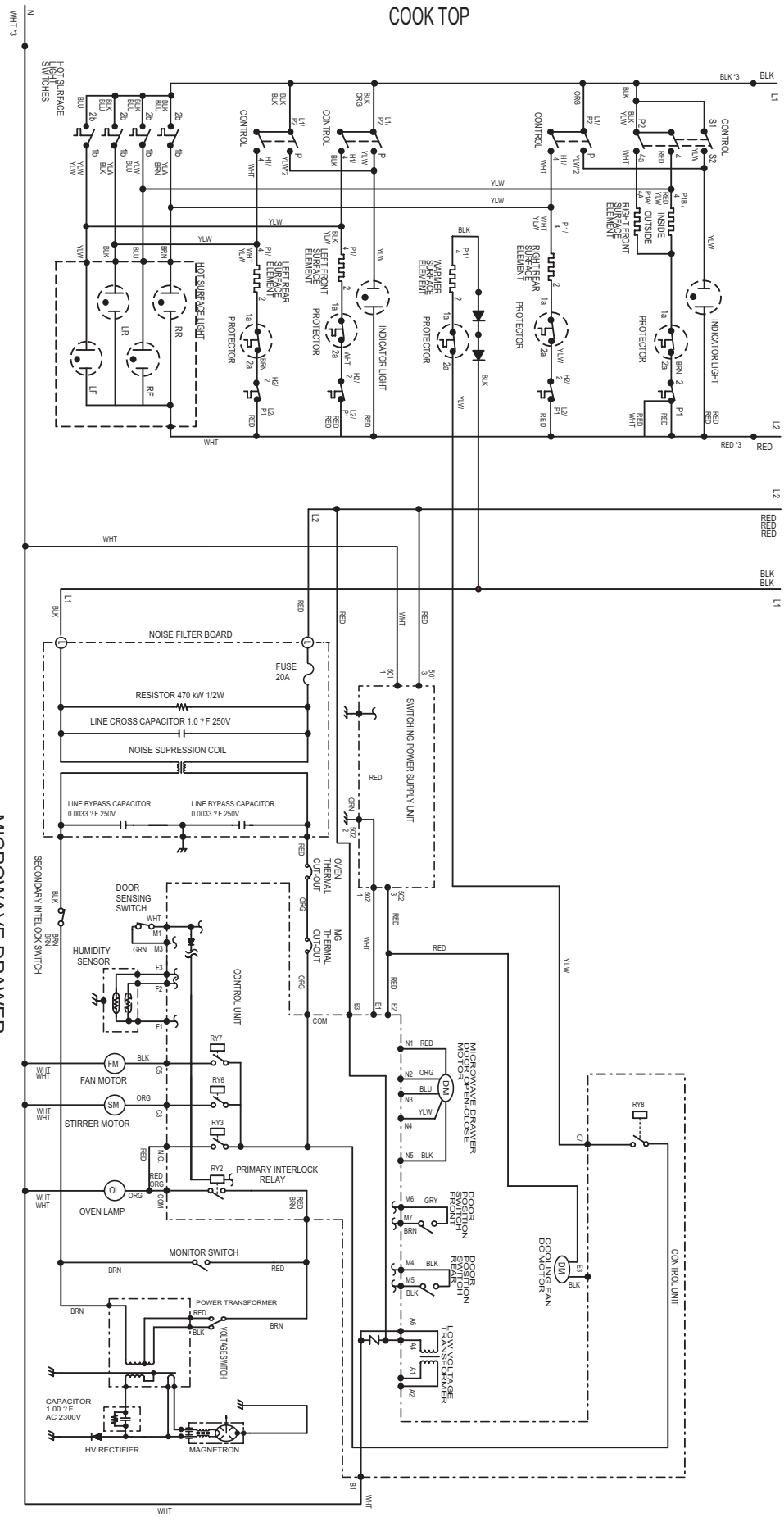
GLASS CERAMIC COOKTOP



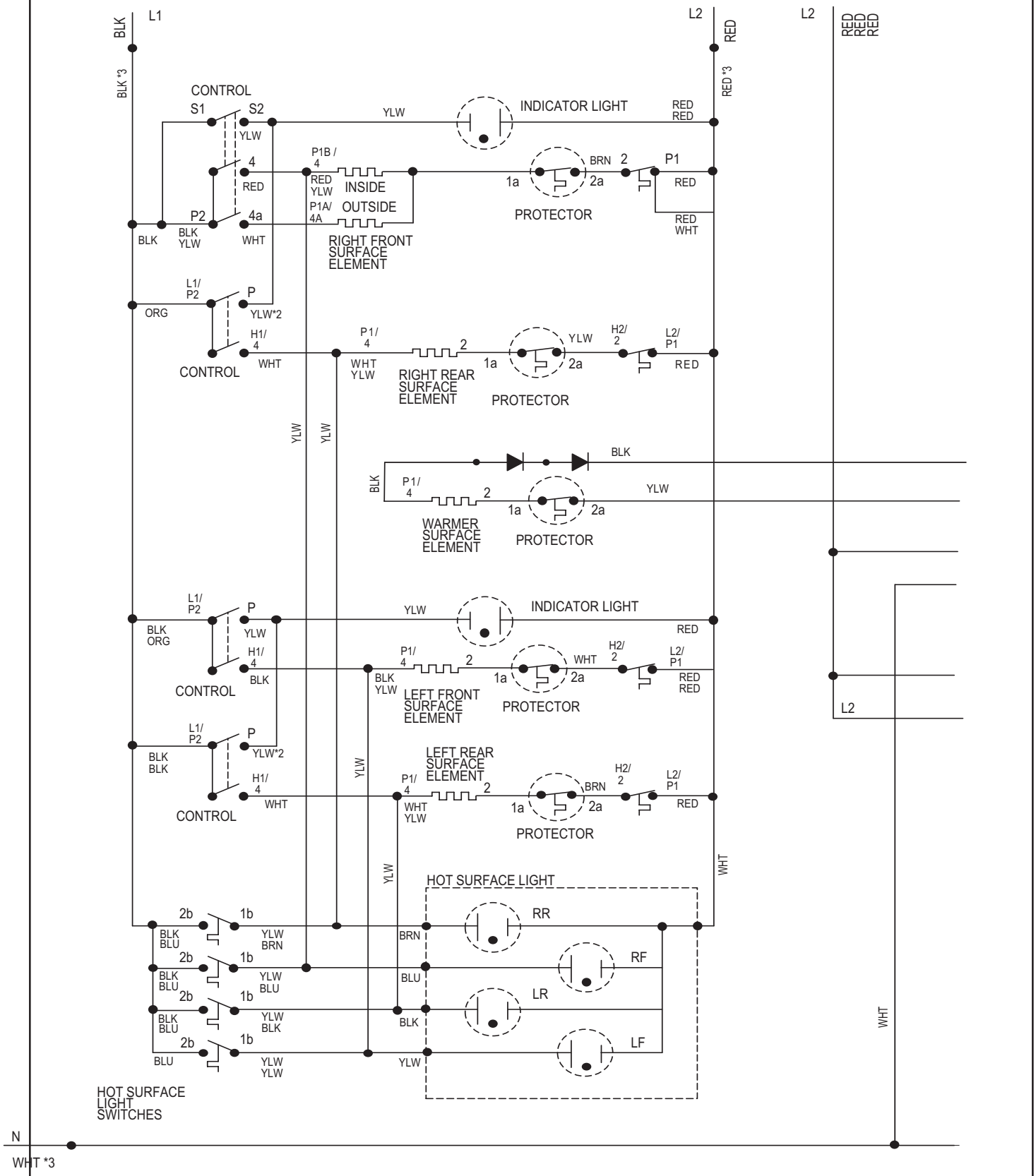
KEYSHEET

KB-5121KS

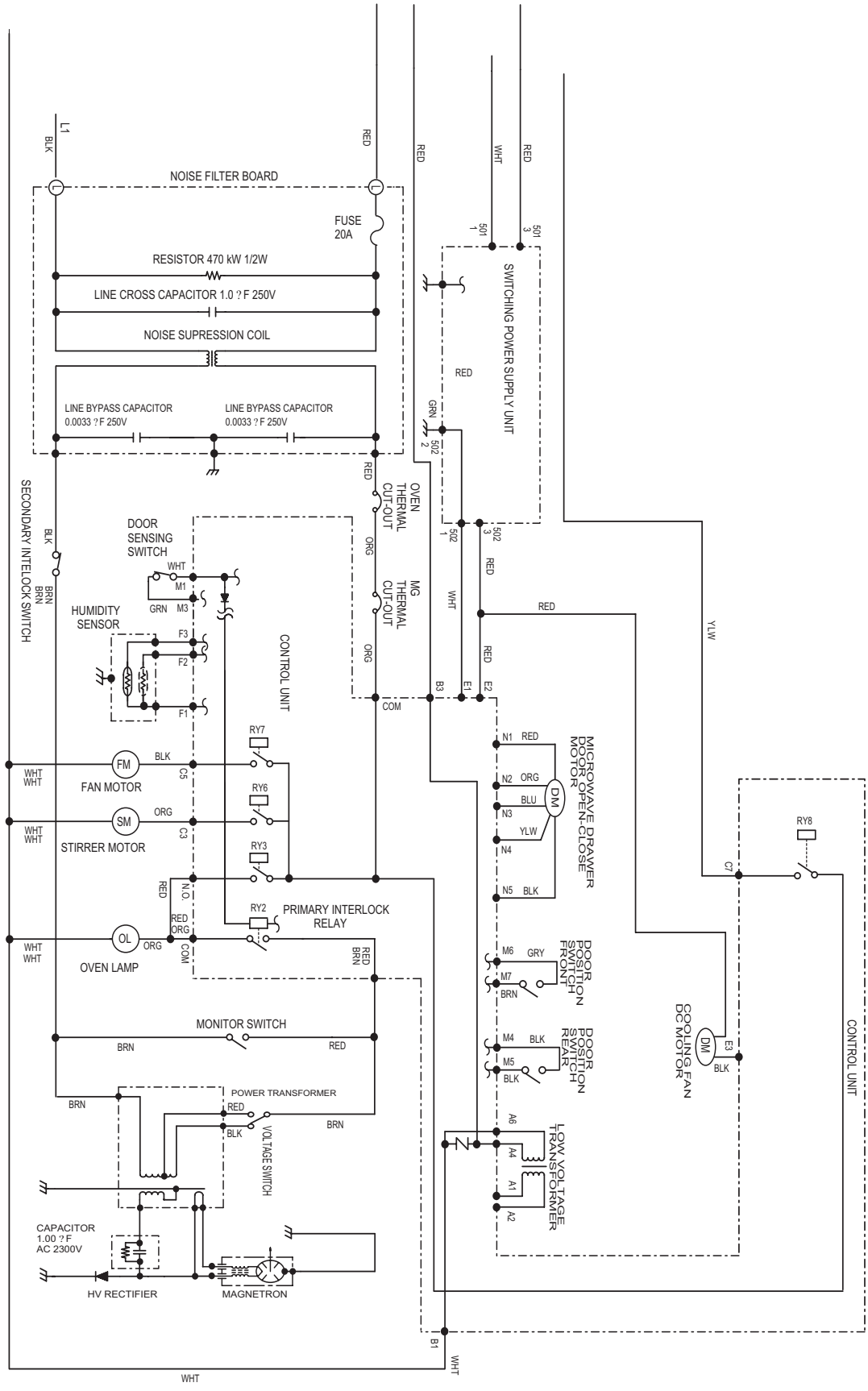
Schematic-Off Condition



COOK TOP SCHEMATIC (DETAIL)



MICROWAVE DRAWER SCHEMATIC (DETAIL)



TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

A **TOUCH CONTROL PANEL ASSEMBLY TEST**

The touch control panel consists of circuits including semiconductors such as LSI, ICs, etc. Therefore, unlike conventional microwave ovens, proper maintenance cannot be performed with only a voltmeter and ohmmeter.
In this service manual, the touch control panel assembly is divided into three units, Control Unit and Keyboard Unit and Power Unit, and troubleshooting by unit replacement is described according to the symptoms indicated.

Before testing,

1) Disconnect the power source, and then disassemble as per "COOK TOP/MICROWAVE DRAWER DISASSEMBLY" page 32.
2) Open the drawer and block it open.
3) Discharge high voltage capacitor.
4) Disconnect the leads to the primary of the power transformer.
5) Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.

1. Keyboard Unit.
   NOTE ;
   1) Check Keyboard unit connection before replacement.
   2) Reconnect all leads removed from components during testing.
   3) Re-install the outer case (cabinet).
   4) Reconnect the power source after the outer case is installed.
   5) Run the oven and check all functions.
      The following symptoms indicate a defective keyboard unit.
   a) When touching the pads, a certain pad produces no signal at all.
   b) When touching a number pad, two figures or more are displayed.
   c) When touching the pads, sometimes a pad produces no signal.
   If the Keyboard unit is defective.
   1) Disconnect the power source, and then remove outer case.
   2) Open the door and block it open.
   3) Discharge high voltage capacitor.
   4) Replace the Keyboard unit.
   5) Reconnect all leads removed from components during testing.
   6) Re-install the covers.
   7) Reconnect the power supply cord after the outer case is installed.
   8) Run the oven and check all functions.
2. Control Unit
   The following symptoms indicate a defective control unit. Before replacing the control unit, perform the Keyboard unit test (Procedure J) to determine if control unit is faulty.

2-1 In connection with indicators
   a) At a certain digit, all or some segments do not light up.
   b) At a certain digit, brightness is low.
   c) Only one indicator does not light.
   d) The corresponding segments of all digits do not light up; or they continue to light up.
   e) Wrong figure appears.
   f) A certain group of indicators do not light up.
   g) The figure of all digits flicker.

2-2 Other possible problems caused by defective control unit.
   a) Buzzer does not sound or continues to sound.
   b) Clock does not operate properly.
   c) Cooking is not possible.

3. Power Unit or Touch Control Transformer
   a) Fan motor, stirrer motor, oven lamp or electrical parts do not turn on or do not turn off.
   b) Digital display on the control unit does not show anything.

When testing is completed,

1) Disconnect the power source, and then disassemble as per "COOK TOP/MICROWAVE DRAWER DISASSEMBLY" page 32.
2) Open the drawer and block it open.
3) Discharge high voltage capacitor.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

4) Reconnect all leads removed from components during testing.
5) Re-install the covers.
6) Reconnect the power source after the outer case is installed.
7) Run the oven and check all functions.

B **KEYBOARD UNIT TEST**

1. Disconnect the power source, and then disassemble as per "COOK TOP/MICROWAVE DRAWER DISASSEMBLY" page 32.
2. Open the drawer and block it open.
3. Discharge high voltage capacitor.
4. If the display fails to clear when the STOP/CLEAR pad is depressed, first verify the wire harness and connectors are making good contact between the control unit and the keyboard, verify that the door sensing switch operates properly; that is the contacts are closed when the door is closed and open when the door is open.
5. Remove the old keyboard unit and install the new keyboed unit (as the normal keyboard unit).
6. Reconnect the wire harness to the keyboard unit.
7. If the control unit responds by clearing with a beep when the stop/clear pad is touched, the old keyboard unit is faulty and must be replaced. If the control unit does not respond, it is faulty and must be replaced. If a specific pad does not respond, the above method may be used (after clearing the control unit) to determine if the control unit or keyboed unit is at fault.
8. Reconnect all leads removed from components during testing.
9. Re-install the covers.
10. Reconnect the power source after the outer case is installed.
11. Run the oven and check all functions.

C **RELAY TEST**

1. Disconnect the power source, and then disassemble as per "COOK TOP/MICROWAVE DRAWER DISASSEMBLY" page 32.
2. Open the drawer and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the leads to the primary of the power transformer.
5. Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
6. After that procedure, re-connect the power supply cord.
7. Remove the covers and check voltage between Pin Nos. 1 and 3 of the 2 pin connector (CN-B) on the power unit with an A.C. voltmeter.
   The meter should indicate 116 or 120 volts, if not check oven circuit.

RY1 and RY2 Relay Test

These relays are operated by D.C. voltage
Check voltage at the relay coil with a D.C. voltmeter during the microwave cooking operation.
DC. voltage indicated ..... Defective relay.
DC. voltage not indicated ..... Check diode which is connected to the relay coil. If diode is good, control unit is defective.

RELAY SYMBOL	OPERATIONAL VOLTAGE	CONNECTED COMPONENTS
RY1	Approx. 18V D.C.	Oven lamp / Stirrer motor
RY2	Approx. 18V D.C.	Power transformer
RY3	Approx. 18V D.C.	Oven common relay
RY4	Approx. 18V D.C.	Top heater
RY5	Approx. 24V D.C.	Fan motor (Microwave)
RY6	Approx. 24V D.C.	Fan motor (Oven)
RY7	Approx. 24V D.C.	Oven lamp (Oven)
RY8	Approx. 24V D.C.	Door lock motor (Oven)
RY9	Approx. 24V D.C.	Convection motor
RY10	Approx. 24V D.C.	Warmer (Cook top)
RY11	Approx. 24V D.C.	Switching power supply
RY-B	Approx. 24V D.C.	Bottom heater
RY-C	Approx. 24V D.C.	Convection heater

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

8. Reconnect all leads removed from components during testing.
9. Re-install the covers.
10. Reconnect the power source after the cabinets are installed.
11. Run the drawer and check all function.

D **DEFROST TEST**

WARNING : The unit should be fully assembled before following procedure.
(1) Place one cup of water in the center of the turntable tray in the oven cavity.
(2) Close the door, touch the Stop/Clear (M) pad and touch the Defrost pad on the LCD. Then touch the Steaks/Chops pad on the LCD. And touch the number pad 5 on the LCD. (Now, weight 0.5lb is set.) And then touch the start pad on the LCD.
(3) The oven is in Defrost cooking condition.
(4) The oven will operate as follows

WEIGHT	1ST STAGE		2ND STAGE		3RD. STAGE	
	LEVEL	TIME	LEVEL	TIME	LEVEL	TIME
0.5lb	60%	20sec.	40%	20sec.	30%	45sec.

(5) If improper operation is indicated, the control unit is probably defective and should be checked.

E **PROCEDURES TO BE TAKEN WHEN THE FUSE ON THE PRINTED WIRING BOARD (PWB) IS OPEN.**

To protect the electronic circuits, this model is provided with a fuse added to the primary on the PWB.
1. Fuse check and repairs.
   1) Disconnect the power source, and then disassemble as per "COOK TOP/MICROWAVE DRAWER DISASSEMBLY" page 32.
   2) Open the drawer and block it open.
   3) Discharge high voltage capacitor.
   4) If the Fuse is blown, replace power unit.
   5) Make a visual inspection of the varistor. Check for burned damage. If the varistor has been burned, replace the power unit.
   6) Examine the touch control transformer with a tester for the presence of layer short-circuit (check the primary coil resistance which is approximately 60Ω ± 10%). If any abnormal condition is detected, replace the touch control transformer.
   7) Reconnect all leads removed from components during testing.
   8) Re-install the covers.
   9) Reconnect the power source after the outer case is installed.
   10) Run the oven and check all functions.

2. Follow the troubleshooting guide given below, if indicator does not light up after above check and repairs are finished.
   1) Disconnect the power source, and then disassemble as per "COOK TOP/MICROWAVE DRAWER DISASSEMBLY" page 32.
   2) Open the door and block it open.
   3) Discharge high voltage capacitor.
   4) Disconnect the leads to the primary of the power transformer.
   5) Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
   6) After that procedure, re-connect the power supply cord.
   7) Follow the troubleshooting guide given below for repair.

TEST PROCEDURES

PROCEDURE LETTER | **COMPONENT TEST**

STEPS	OCCURRENCE	CAUSE OR CORRECTION
1	The rated AC voltage is not present between Pin Nos. 1and 3 of the 2-pin connecter (CN-B).	Check supply voltage and oven power cord.
2	The rated AC voltage is present at primary side of touch control transformer.	Touch control transformer or secondary circuit defective. Check and replace touch control transformer or power unit .

8) Reconnect all leads removed from components during testing.
9) Re-install the covers.
10) Reconnect the power source after the cabinets are installed.
11) Run the oven and check all functions.

F **AH SENSOR TEST**

Checking the initial sensor cooking condition

WARNING : The oven should be fully assembled before following procedure.

(1) The oven should be plugged in at least two minutes before sensor cooking.
(2) Room temperature should not exceed 95°F (35°C).
(3) The unit should not be installed in any area where heat and steam are generated. The unit should not be installed, for example, next to a conventional surface unit. Refer to the "INSTALLATION INSTRUCTIONS" of the operation manual.
(4) Exhaust vents are provided on the back of the unit for proper cooling and air flow in the cavity. To permit adequate ventilation, be sure to install so as not to block these vents. There should be some space for air circulation.
(5) Be sure the exterior of the cooking container and the interior of the oven are dry. Wipe off any moisture with a dry cloth or paper towel.
(6) The Sensor works with food at normal storage temperature. For example, chicken pieces would be at refrigerator temperature and canned soup at room temperature.
(7) Avoid using aerosol sprays or cleaning solvents near the oven while using Sensor settings. The sensor will detect the vapor given of by the spray and turn off before food is properly cooked.
(8) If the sensor has not detected the vapor of the food, ERROR will appear and the oven will shut off.

Water load cooking test

WARNING : The oven should be fully assembled before following procedure.

Make sure the oven has been plugged in at least two minutes before checking sensor cook operation. The cabinet should be installed and screws tightened.

(1) Fill approximately 200 milliliters (7.2 oz) of tap water in a 1000 milliliter measuring cup.
(2) Place the container on the center of tray in the oven cavity.
(3) Close the door.
(4) Touch the UPER MICROWAVE OVEN pad, ∧ pad, ∨ pad, START MINUTE PLUS pad and the SENSOR LOAD pad on the LCD. And touch the number pad 4 once. Now, the oven is in the sensor cooking condition, and "20BIT" and "MICRO" will appear in the display.
(5) The oven will operate for the first 16 seconds, without generating microwave energy.

NOTE: ERROR will appear if the door is opened or STOP/CLEAR pad is touched during first stage of sensor cooking.

(6) After approximately 16 seconds, microwave energy is produced.

If ERROR is displayed or the oven does not turn off, replace the AH sensor or check the control unit, refer to explanation below.

TESTING METHOD FOR AH SENSOR AND/OR CONTROL UNIT

To determine if the sensor is defective, the simplest method is to replace it with a new replacement sensor.

1) Disconnect the power source, and then disassemble as per "COOK TOP/MICROWAVE DRAWER DISASSEMBLY" page 32.
2) Open the drawer and block it open.
3) Discharge high voltage capacitor.
4) Remove the AH sensor.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

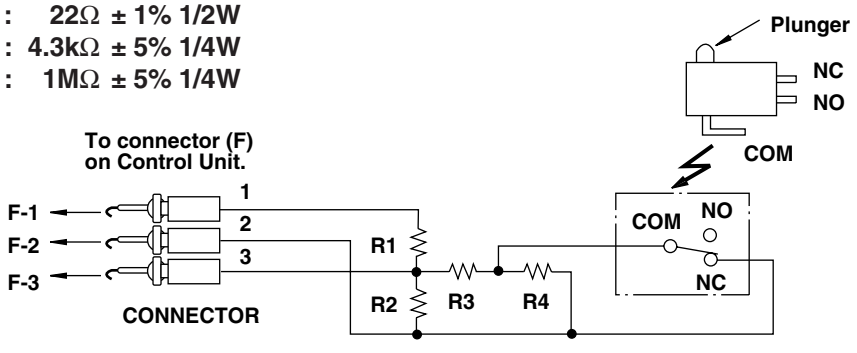
(5) Install the new AH sensor.
(6) Reconnect all leads removed from components during testing.
(7) Re-install the outer case (cabinet).
(8) Reconnect the power source after the cabinets are installed.
(9) Reconnect the oven to the power supply and check the sensor cook operation as follows:
9-1. Fill approximately 200 milliliters (7.2 oz) of tap water in a 1000 milliliter measuring cup.
9-2. Place the container on the center of tray in the oven cavity.
9-3. Close the door.
9-4. Touch the UPER MICROWAVE OVEN pad, ∧pad, ∨ pad, START MINUTE PLUS pad and the SENSOR LOAD pad on the LCD. And touch the number pad 4 once.
9-5. The control panel is in automatic Sensor operation.
9-6. The oven turns off automatically, and the time for detecting moisture will be displayed.

If new sensor dose not operate properly, the problem is with the control unit, and refer to explanation below.

CHECKING CONTROL UNIT

(1) Disconnect the power source, and then disassemble as per "COOK TOP/MICROWAVE DRAWER DISASSEMBLY" page 32.
(2) Open the drawer and block it open.
(3) Discharge high voltage capacitor.
(4) Disconnect the sensor connector that is mounted to control panel.
(5) Then connect the dummy resistor circuit (see fig.) to the sensor connector of control panel.
(6) Disconnect the leads to the primary of the power transformer.
(7) Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
(8) After that procedure, re-connect the power supply cord.
(9) Check the sensor cook operation proceed as follows:
9-1. Close the door.
9-2. Touch the UPER MICROWAVE OVEN pad, ∧ pad, ∨ pad, START MINUTE PLUS pad and the SENSOR LOAD pad on the LCD. And touch the number pad 4 once.
9-3. The control panel is in the sensor cooking operation.
9-4. After approximately 25 seconds, push plunger of select switch for more than 3 seconds. This condition is same as judgement by AH sensor.
9-5. After approximately 3 seconds, the display shows " X X . X X " which is the time for detecting moisture.
If the above is not the case, the control unit is probably defective.
If the above is proper, the AH sensor is probably defective.
(10) Disconnect the power source, and the covers.
(11) Open the door and block it open.
(12) Discharge high voltage capacitor.
(13) Disconnect the dummy resistor circuit from the sensor connector of control panel.
(14) Carry out necessary repair.
(15) Reconnect all leads removed from components during testing and repairing.
(16) Re-install the covers.
(17) Reconnect the power source after the cabinets are installed. Run the oven and check all functions.
(18) Carry out "Water load cooking test" again and ensure that the oven works properly.

R1, R2 : 22Ω ± 1% 1/2W
R3 : 4.3kΩ ± 5% 1/4W
R4 : 1MΩ ± 5% 1/4W



Sensor Dummy Resistor Circuit

G SURFACE ELEMENTCONTROL SYSTEMS

Two types of surface elements control systems are covered in this manual.

1. Standard infinite switch.

2. Dual infinite switch.

Standard infinite switch:

The surface elements and standard infinite switches provide an infinite choice of heat settings for cooking. Controls are safety type and must be pushed in before turning. All surface controls are marked on the control panel for their respective heating element. Power is supplied to the surface elements through the infinite switch contacts L1-H1 and L2-H2. During actual surface element operation, if the control is set to the high position contacts L2-H2 are lock closed providing continuous power to the element. In all other setting contacts L2-H2 will cycle to maintain the correct heat setting. Contacts L1-P provide power to the surface element indicator light.

Troubleshooting:

There are four ways a surface control system with a standard infinite switch can fail.

1. The element does not heat.

2. The switch does not cycle the element off and on when set to a position other than high.

3. The element operates correctly, but the indicator light does not glow.

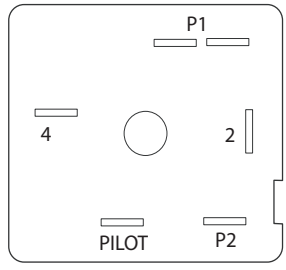
4. Indicator light glows with all infinite switches in the off position.

   NOTE: If the indicator light glows very dimly with all the switches in the off position. This problem is caused by a capacitive feed over in the wiring and can be corrected by connecting a 100,000 Ohm 1/4 watt resistor in parallel with the light.

Continuity tests can be performed on the infinite switch contacts. All tests should be performed with power to the range disconnected, and wiring removed from the switch. Set an ohmmeter on R X 1K scale and check the contacts in the following chart and switch terminal diagram.

Contacts	Dial Position		
	OFF	LO-MED	HI
L1 - P	O	X	X
L1 - H 1	O	X	X
L2 - H 2	O	X - C	X

O - open X - closed



Element does not heat:

Checking the system with a Voltmeter, if the element does not heat up.

1. Remove the back of the control panel to expose the switch terminals.

2. With a Voltmeter set for AC on a scale higher than 240 Volts measure the voltage drop between terminals L1 and L2. If the meter reads zero the wiring between the main terminal block on the range and the switch is open. If the meter reads line to line voltage (around 240 VAC) go to step 3.

3. With the switch turned to the high position measure the voltage drop between terminals H1 and H2. If the meter reads zero the switch is defective. If the meter reads line to line voltage the switch is good. If the range has standard elements go to step 4. If the range has a glass smooth go to step 5.

4. Remove the element and measure the voltage drop between terminals of the terminal block. If the meter reads zero the terminal block or the wiring between the switch and the terminal block is open. If the meter reads line to line voltage the element is defective.

   NOTE: Always inspect the terminal block for burnt spots that can cause poor connection.

5. Raise the top and locate the two terminals on the element that the wires from H1 and H2 are on. Measure the voltage drop between the two terminals. If the meter reads zero the wires

between the switch and the element are open. If the meter reads line to line voltage the element is defective.

Element does not cycle:

If the element does not cycle when the switch is set in a position other than high the switch is defective.

Indicator light does not glow:

If indicator light does not glow when the switch is turned on, remove the back panel of the backguard, turn the switch on, and measure the voltage drop between terminals P and L2. If the meter reads zero the switch is defective. If the meter reads line to line voltage (around 240 VAC) the light or the wiring to the light is defective.

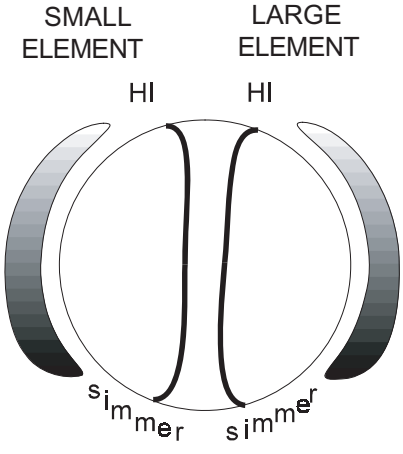
Indicator light glows full brilliance with all top element switches off:

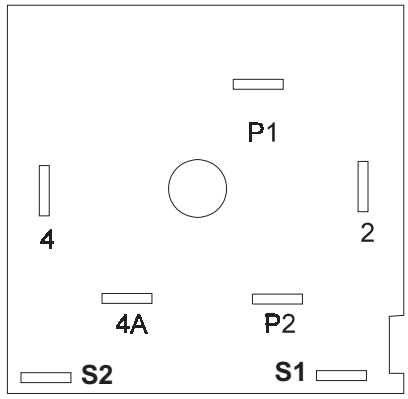
If indicator light glows full brilliance with all top element switches off, one or more of the switches are defective. Disconnect electrical power from the range, and remove the back panel of the backguard. Disconnect the wire from the P terminal on all switches but one switch. Reconnect power. If the indicator light glows with the switch in the off position, the switch is defective. If the indicator light does not glow, the switch is good. Check each switch by disconnecting the wires from all the other P terminals but the switch you are testing.

Dual infinite switch:

The dual infinite switch is used to control the expandable and bridge elements on electric smooth top ranges. The dual infinite switches provide an infinite choice of heat settings for cooking, and two selection of element sizes. Controls are safety type and must be pushed in before turning. All surface controls are marked on the control panel for their respective heating element.

When the knob is turned clockwise, less than 180 degrees, contacts P2 to 4, P2 to 4A, and P1 to 2 closes





providing power to both elements. When the knob is turned counterclockwise, less than 180 degrees, contacts P2 to 4 and P1 to 2 close providing power to the inner element. During actual surface element operation, if the control is set to the high position contacts P1 to 2 are locked closed providing continuous power to the element. In all other settings contacts P1 to 2 will cycle to maintain the correct heat setting. Contact 4 to L2 provides power to the surface element indicator light.

See Cook Surface Schematic, Fig. 1

Troubleshooting:

There are six ways a surface control system with a dual infinite switch can fail.

1. Both elements do not heat.
2. The outer element does not heat.
3. The inner element does not heat.
4. The switch does not cycle the element off and on when set to a position other than high.
5. The element operates correctly, but the indicator light does not glow.
6. Indicator light glows with all the infinite switches in the off position.

NOTE: If the indicator light glows very dimly with all the switches in the off position. This problem is caused by a capacitive feed over in the wiring and can be corrected by connecting a 100,000 Ohm 1/4 watt resistor in parallel with the light.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

Both elements do not heat:

Checking the system with a Voltmeter, if the elements do not heat up:

1. Remove the back panel of the backguard to expose the switch terminals.

2. With a Voltmeter set for AC and a scale higher than 240 Volts measure the voltage drop between terminals P1 and P2. If the meter reads zero the wiring between the main terminal block on the range and the switch is open. If the meter reads line to line voltage (around 240 VAC) go to step 3.

3. With the switch turned clockwise to the HI position, measure the voltage drop between terminals 4 and 2. If the meter reads zero the switch is defective. If the meter reads line to line voltage measure the voltage drop between terminals 4A and 2. If the meter reads line to line voltage the switch is good. Go to step 4.

4. Raise the top and locate the two terminals on the element with the wires from terminals 4 and 2 are connected. Measure the voltage drop between these two terminals. If the meter reads zero the wires between the switch and the element are open. If the meter reads line to line voltage the element is defective.

Outer element doesn't heat, but inner element does:

Checking the system with a Voltmeter, if the outer element does not heat, but the inner element does:

1. Remove the back panel of the backguard to expose the switch terminals.

2. With the switch turned clockwise to the high position measure the voltage drop between terminals 4A and 2. If the meter reads zero the switch is defective. If the meter reads line to line voltage, go to step 3.

3. Raise the top and locate the two terminals on the element where the wires from terminals 4A and 2 are connected. Measure the voltage drop between these two terminals. If the meter reads zero the wires between the switch and the element are open. If the meter reads line to line voltage the element is defective.

Inner element doesn't heat, but outer element does:

Checking the system with a Voltmeter, if the inner element does not heat, but the outer element does:

1. Remove the back panel of the backguard to expose the switch terminals.

2. With the switch turned clockwise to the high position measure the voltage drop between terminals 4 and 2. If the meter reads zero the switch is defective. If the meter reads line to line voltage, go to step 3.

3. Raise the top and locate the two terminals on the element where the wires from terminals 4 and 2 are connected. Measure the voltage drop between these two terminals. If the meter reads zero the wires between the switch and the element are open. If the meter reads line to line voltage the element is defective.

Elements do not cycle:

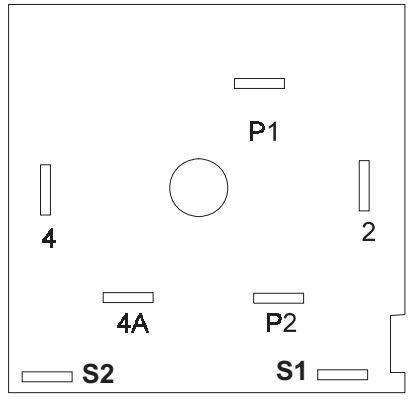
If the elements do not cycle when the switch is set in a position other than high the switch is defective.

Indicator light does not glow:

If indicator light does not glow when the switch is turned on, remove the back panel of the backguard, turn the switch on, and measure the voltage drop between terminals 4 and L2. If the meter reads zero the switch is defective. If the meter reads line to line voltage (around 240VAC) the light or the wiring to the light is defective.

Indicator light glows full brilliance with all top element switches off:

If indicator light glows full brilliance with all top element switches off, one or more of switches are defective. Disconnect electrical power from the range, and remove the back panel of the backguard. Disconnect the wire from terminal 4 on the switches from all but one switch. Reconnect power. If the indicator light glows with the switch in the off position the switch is defective. If the indicator light does not glow the switch is good. Check each dual infinite switch by disconnecting the wires from all the other 4 terminals but the switch you are testing.



See Cook Surface Schematic, Fig. 1

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

H **MAGNETRON ASSEMBLY TEST**

1. Disconnect the power source.
2. Open the drawer and keep it open.
3. To discharge high voltage capacitor, wait for 60 seconds.
4. To test for an open filament, isolate the magnetron from the high voltage circuit. A continuity check across the magnetron filament leads should indicate less than 1 ohm.
5. To test for a shorted magnetron, connect the ohmmeter leads between the magnetron filament leads and chassis ground. This test should indicate an infinite resistance. If there is little or no resistance the magnetron is grounded and must be replaced.
6. Reconnect all leads removed from components during testing.
7. Reassemble the unit.
8. Reconnect the power source.
9. Run the oven and check all functions.

MICROWAVE OUTPUT POWER

The following test procedure should be carried out with the microwave oven in a fully assembled condition.

HIGH VOLTAGES ARE PRESENT DURING THE COOK CYCLE, SO EXTREME CAUTION SHOULD BE OBSERVED.

Power output of the magnetron can be measured by performing a water temperature rise test. This test should only be used if above tests do not indicate a faulty magnetron and there is no defect in the following components or wiring: inverter unit. This test will require a 16 ounce (453cc) measuring cup and an accurate mercury thermometer or thermocouple type temperature tester. For accurate results, the following procedure must be followed carefully:

1. Fill the measuring cup with 16 oz. (453cc) of tap water and measure the temperature of the water with a thermometer or thermocouple temperature tester. Stir the thermometer or thermocouple through the water until the temperature stabilizes. Record the temperature of the water.
2. Place the cup of water in the oven. Operate oven at POWER 10(HIGH) selecting more than 60 seconds cook time. Allow the water to heat for 60 seconds, measuring with a stop watch, second hand of a watch or the digital read-out countdown.
3. Remove the cup from the oven and again measure the temperature, making sure to stir the thermometer or thermocouple through the water until the maximum temperature is recorded.
4. Subtract the cold water temperature from the hot water temperature. The normal result should be 28° to 54°F (16° to 30°C) rise in temperature. If the water temperatures are accurately measured and tested for the required time period the test results will indicate if the magnetron tube has low power output (low rise in water temperature) which would extend cooking time or high power output (high rise in water temperature) which would reduce cooking time. Because cooking time can be adjusted to compensate for power output, the magnetron tube assembly should be replaced only if the water temperature rise test indicates a power output well beyond the normal limits. The test is only accurate if the power supply line voltage is 240 volts and the oven cavity is clean.

I **OVEN THERMAL CUT-OUT TEST**

1. Disconnect the power source.
2. Open the drawer and keep it open.
3. To discharge high voltage capacitor, wait for 60 seconds.
4. A continuity check across the thermal cut-out terminals should indicate a closed circuit unless the temperature of the thermal cut-out reaches approximately 293°F(145°C).
   An open thermal cut-out indicates overheating of the oven, exchange the oven thermal cut-out and check inside of oven cavity and for improper setting of cooking time or operation of control unit. Check for restricted air flow through the vent holes of the oven cavity, especially the cooling fan and air guide.
5. Reconnect all leads removed from components during testing.
6. Reassemble the unit.
7. Reconnect the power source.
8. Run the unit and check all functions.

CAUTION: IF THE THERMAL CUT-OUT INDICATES AN OPEN CIRCUIT AT ROOM TEMPERATURE, REPLACE THERMAL CUT-OUT.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

J **SECONDARY INTERLOCK SWITCH TEST**

1. Disconnect the power source.
2. Open the drawer and keep it open.
3. To discharge high voltage capacitor, wait for 60 seconds.
4. Isolate the switch and connect the ohmmeter to the common (COM.) and normally open (NO) terminal of the switch. The meter should indicate an open circuit with the drawer open and a closed circuit with the drawer closed. If improper operation is indicated, replace the secondary interlock switch.
5. Reconnect all leads removed from components during testing.
6. Reassemble the unit.
7. Reconnect the power source.
8. Run the oven and check all functions.

K **STOP SWITCH TEST**

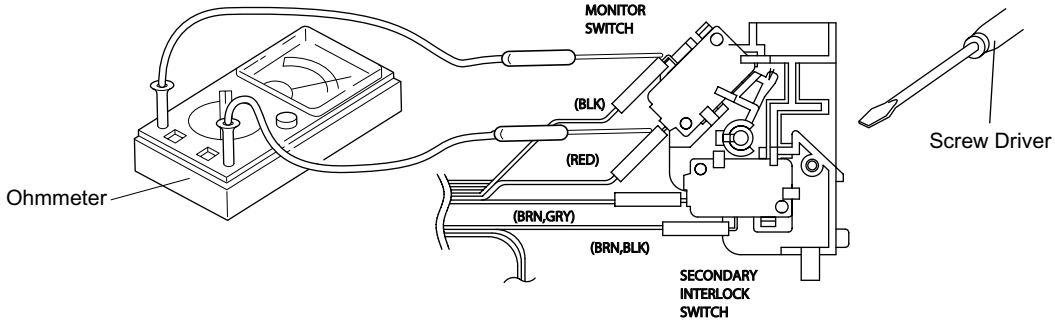
STOP SWITCH

1. Disconnect the power source.
2. Open the drawer and keep it open.
3. To discharge high voltage capacitor, wait for 60 seconds.
4. Isolate the switch and connect the ohmmeter to the common (COM.) and normally open (NO) terminal of the switch. The meter should indicate an open circuit with the drawer open and a closed circuit with the drawer closed. If improper operation is indicated, replace the stop switch.
5. Reconnect all leads removed from components during testing.
6. Reassemble the unit.
7. Reconnect the power source.
8. Run the oven and check all functions.

NOTE: If the stop switch contacts fail in the open position and the door is closed, the cooling fan motor, stirrer motor and oven light will be activated by RY1.

L **MONITOR SWITCH TEST**

1. Disconnect the power source.
2. Open the drawer and keep it open.
3. To discharge high voltage capacitor, wait for 60 seconds.
4. Before performing this test, make sure that the secondary interlock switch, according to the above Switch Test Procedure. Disconnect the wire lead from the monitor switch (COM) terminal. Check the monitor switch operation by using the ohmmeter as follows. When the drawer is open, the meter should indicate a closed circuit. When the monitor switch actuator is pushed by a screw driver through the lower latch hole on the front plate of the oven cavity with the drawer opened (in this condition the plunger of the monitor switch is pushed in), the meter should indicate an open circuit. If improper operation is indicated, the switch may be defective and both the monitor switch, plus fuse will need to be replaced. After testing the monitor switch, reconnect the wire lead to the monitor switch (COM) terminal and check the continuity of the monitor circuit.
5. Reconnect all leads removed from components during testing.
6. Reassemble the unit.
7. Reconnect the power source.
8. Run the oven and check all functions.



TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

M **BLOWN MONITOR FUSE TEST**

1. Disconnect the power source.
2. Open the drawer and block it open.
3. To discharge high voltage capacitor, wait for 60 seconds.
4. If the monitor fuse is blown when the drawer is opened, check the primary interlock switch, secondary interlock switch and monitor switch according to the "TEST PROCEDURE" for those switches before replacing the blown monitor fuse.

CAUTION: BEFORE REPLACING A BLOWN MONITOR FUSE, TEST THE SECONDARY INTERLOCK SWITCH, STOP SWITCH AND MONITOR SWITCH FOR PROPER OPERATION.

If the monitor fuse is blown by improper switch operation, the monitor fuse and monitor switch must be replaced with "monitor fuse and monitor switch assembly" part number FFS-BA018/KIT, even if the monitor switch operates normally. The monitor fuse and monitor switch assembly is comprised of a 20 ampere fuse and switch.

5. Reconnect all leads removed from components during testing.
6. Reassemble the unit.
7. Reconnect the power source.
8. Run the oven and check all functions.

N **POWER TRANSFORMER TEST**

1. Disconnect the power source.
2. Open the drawer and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the primary input terminals and measure the resistance of the transformer with an ohmmeter. Check for continuity of the coils with an ohmmeter. On the R x 1 scale, the resistance of the primary coil should be less than 1 ohm and the resistance of the high voltage coil should be approximately 90 ohms; the resistance of the filament coil should be less than 1 ohm.
5. Reconnect all leads removed from components during testing.
6. Reassemble the unit.
7. Reconnect the power source.
8. Run the oven and check all functions.

(HIGH VOLTAGES ARE PRESENT AT THE HIGH VOLTAGE TERMINAL, SO DO NOT ATTEMPT TO MEASURE THE FILAMENT AND HIGH VOLTAGE.)

TOUCH CONTROL PANEL ASSEMBLY

OUTLINE OF TOUCH CONTROL PANEL

The touch control section consists of the following units.

(1) Keyboard unit
(2) Control Unit
(3) Power unit

The principal functions of these units and the signals communicated among them are explained below.

Keyboard unit
The keyboard unit is composed of a matrix, signals generated in the LSI are sent to the keyboard unit . When a key pad is touched, a signal is completed through the keyboard unit and passed back to the LSI to perform the function that was requested.

Control Unit and Power Unit
Control unit consists of LSI, IC, reset circuit, indicator circuit, power source circuit, relay circuit, buzzer circuit, synchronizing signal circuit, keyboard unit circuit, humidity sensor circuit and back light circuit.

1) IC1 (LSI)
This is a microcomputer, responsible for controlling the entire control unit.

2) IC2
This is the IC to judge the selected key.

3) IC3
This is the IC to judge the selected key.

4) IC4
This is the IC to judge the selected key.

5) IC5
This is the IC to amplify the signal from the humidity sensor and the IC to amplify the signal to adust the contrast of LCD.

6) IC6
This is memory IC.

7) IC7
This is the IC to drive the relays.

8) IC8
This is the IC to drive the relays.

9) Reset Circuit
This circuit generates a signal which resets the LSI (IC1) to the initial state when power is supplied.

10) Indicator Circuit
A circuit to drive the Liquid Crystal Displays (LCD1).

11) **Power Source Circuit**
This circuit generates voltages necessary in the control unit from the AC line voltage.
In addition, the synchronizing signal is available in order to compose a basic standard time in the clock circuit.

Symbol	Voltage	Application
VC	+5V	LSI(IC1)

12) Relay Circuit
A circuit to drive the magnetron, fan motor, stirrer motor, convection motor, door lock motor, bottom heater, top heater, convection heater and light the oven lamp.

13) Buzzer Circuit
The buzzer is responsive to signals from the LSI to emit audible sounds (key touch sound and completion sound).

14) Synchronizing Signal Circuit
The power source synchronizing signal is available in order to compose a basic standard time in the clock circuit.
It accompanies a very small error because it works on commercial frequency.

15) Door Sensing Switch (Microwave drawer)
A switch to “tell” the LSI if the drawer is open or closed.

16) Door Switch (Oven)
A switch to “tell” the LSI if the oven door is open or closed.

17) Door Lock Monitor Switch (Oven)
A switch to “tell” the LSI if the oven door is locked or not.

18) Door Position Switch Front / Rear
The switch to “tell” the position of the Microwave drawer door.

19) Back Light Circuit
A circuit to drive the back light (Light emitting diodes LD1- LD5).

20) Cook Top Warmer Indicator Circuit
A circuit to drive the indicator (LD10) for Cook Top Warmer.

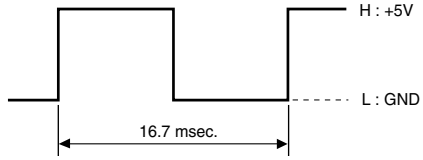
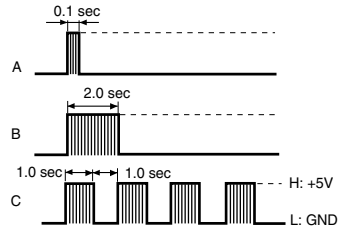
21) Transparent electrode (Touch key) on the LCD
When the ① - ⑥ of the transparent electrodes are touched, the signal are input into the P96, P-95, P94, P92, P91 and P90 of the LSI (IC-1) to perform the function that was requested.

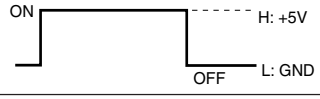
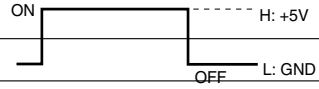
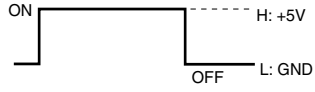
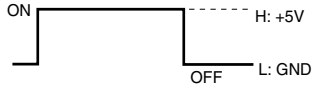
22) Humidity Sensor Circuit
This circuit detects moisture of the cooking food to allow its automatic cooking.

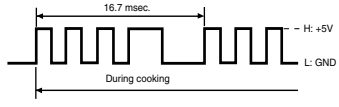
DESCRIPTION OF LSI (IC-1)

The I/O signal of the LSIis detailed in the following table.

Pin No.	Signal	I/O	Description
1	P96	IN	**Signal coming from Transparent electrode (touch key on the LCD).** When the ① key of the transparent electrode is touched, a corresponding signal out of OUT1 of IC-2 will be input into P96 of IC-1.
2	P95	IN	**Signal coming from Transparent electrode (touch key on the LCD).** When the ② key of the transparent electrode is touched, a corresponding signal out of OUT3 of IC-2 will be input into P95 of IC-1.
3	P94	IN	**Signal coming from Transparent electrode (touch key on the LCD).** When the ③ key of the transparent electrode is touched, a corresponding signal out of OUT4 of IC-2 will be input into P94 of IC-1.
4	P93	OUT	The signal to adjust the contrast of LCD is output to IC-5.
5	P92	IN	**Signal coming from Transparent electrode (touch key on the LCD).** When the ④ key of the transparent electrode is touched, a corresponding signal out of OUT1 of IC-3 will be input into P92.
6	P91	IN	**Signal coming from Transparent electrode (touch key on the LCD).** When the ⑤ key of the transparent electrode is touched, a corresponding signal out of OUT3 of IC-3 will be input into P91.
7	P90	IN	**Signal coming from Transparent electrode (touch key on the LCD).** When the ⑥ key of the transparent electrode is touched, a corresponding signal out of OUT4 of IC-3 will be input into P90.
8	BYTE	IN	Connected to VCC1.
9	CNVSS	IN	**Power source voltage: 0V (GND).** The power source vpltage to drive the LSI (IC-1) is input. Connected to GND.
10	P87	OUT	Memory (EEPROM) clock out.
11	P86	IN/OUT	Memory (EEPROM) data input/output.
12	RESET	IN	**Auto clear terminal.** Signal is input to reset the LSI to the initial state when power is applied. Temporarily set to “L” level the moment power is applied, at this time the LSI is reset. Thereafter set at “H” level.
13	XOUT	OUT	**Internal clock oscillation frequency control output.** Output to control oscillation input of Xin.
14	VSS	IN	**Power source voltage: 0V (GND).** The power source vpltage to drive the LSI (IC-1) is input. Connected to GND.
15	XIN	IN	**Internal clock oscillation frequency setting input.** The internal clock frequency is set by inserting the ceramic filter oscillation circuit with respect to Xout terminal.
16	VCC1	IN	**Power source voltage: +5.0V.** The power source voltage to drive the LSI (IC-1) is input to VCC1 therminal.
17	NMI	IN	Connected to VCC1.
18	P84	IN	**Input signal which communicates the drawer door close information to LSI from the door sensing switch.** Door opened; “L” level signal(0V). Door closed; “H” level signal(+5V).
19	P83	IN	**Input signal which communicates the drawer door open information to LSI from the door position switch front.** Door opened; “L” level signal(0V). Door closed; “H” level signal(+5V).

<table>
<tr><th>Pin No.</th><th>Signal</th><th>I/O</th><th>Description</th></tr>
<tr><td>20</td><td>INT0</td><td>IN</td><td><u>Signal to synchronize LSI with commercial power source frequency.</u>
This is the basic timing for all real time processing of LSI.
 
</td></tr>
<tr><td>21</td><td>P81</td><td>OUT</td><td><u>Signal to change the rotational direction is output to the Microwave drawer door open-close motor.</u></td></tr>
<tr><td>22</td><td>TA4OUT</td><td>OUT</td><td><u>Signal to sound buzzer.</u>
A: Key touch sound.
B: Completion sound.
C: When the oven stops so that the food can be checked in Automatic cooking mode.
 
</td></tr>
<tr><td>23</td><td>P77</td><td>OUT</td><td><u>Magnetron high-voltage circuit driving signal.</u>
To turn on and off the cook relay(RY2). In 100% power operation, the signals holds “H” level during microwave cooking and “L” level while not cooking. In other cooking modes (90%, 80%, 70%, 60%, 50%, 40%, 30%, 20%, 10%, 0%) the signal turns to “H” level and “L” level in repetition according to the power level.
<table>
<tr><th></th><th colspan="2">Microwave cooking mode</th><th colspan="2">Other cooking mode</th></tr>
<tr><th>VARI MODE</th><th>ON TIME</th><th>OFF TIME</th><th>ON TIME</th><th>OFF TIME</th></tr>
<tr><td>100% power</td><td>32 sec.</td><td>0 sec.</td><td>60sec.</td><td>0ec.</td></tr>
<tr><td>90% power</td><td>30 sec.</td><td>2 sec.</td><td>54sec.</td><td>6sec.</td></tr>
<tr><td>80% power</td><td>26 sec.</td><td>6 sec.</td><td>48sec.</td><td>12sec.</td></tr>
<tr><td>70% power</td><td>24 sec.</td><td>8 sec.</td><td>42sec.</td><td>18sec.</td></tr>
<tr><td>60% power</td><td>22 sec.</td><td>10 sec.</td><td>36sec.</td><td>24sec.</td></tr>
<tr><td>50% power</td><td>18 sec.</td><td>14 sec.</td><td>30sec.</td><td>30sec.</td></tr>
<tr><td>40% power</td><td>16 sec.</td><td>16 sec.</td><td>24sec.</td><td>36sec.</td></tr>
<tr><td>30% power</td><td>12 sec.</td><td>20 sec.</td><td>18sec.</td><td>42sec.</td></tr>
<tr><td>20% power</td><td>8 sec.</td><td>24 sec.</td><td>12sec.</td><td>48sec.</td></tr>
<tr><td>10% power</td><td>6 sec.</td><td>26 sec.</td><td>4sec.</td><td>56sec.</td></tr>
<tr><td>0% power</td><td>0 sec.</td><td>32 sec.</td><td>0sec.</td><td>60sec.</td></tr>
</table></td></tr>
<tr><td>24</td><td>TA3OUT</td><td>OUT</td><td>Signal to change the rotational speed is output to the Microwave drawer door open-close motor.</td></tr>
<tr><td>25</td><td>TA2IN</td><td>IN</td><td>Plus signal coming from the Microwave drawer door open-close motor is input into TA2IN as revolution number.</td></tr>
<tr><td>26-30</td><td>P74-P70</td><td>OUT</td><td>Used for initial balancing of the bridge circuit (absolute humidity sensor).</td></tr>
<tr><td>31-33</td><td>A67-A65</td><td>OUT</td><td>Terminal not used.</td></tr>
<tr><td>34</td><td>P64</td><td>IN</td><td><u>To input signal which communicates the oven door open/close information to LSI.</u>
Door open "H" level signal (+5V). Door close "L" level signal (GND).</td></tr>
<tr><td>35</td><td>TXD0</td><td>IN</td><td>Signal coming from key unit.</td></tr>
<tr><td>36</td><td>RXD0</td><td>IN</td><td>Signal coming from key unit.</td></tr>
<tr><td>37</td><td>P61</td><td>OUT</td><td><u>Signal to reset LSI.</u>
Signal is output to reset IC-2, IC-3 and IC-4.</td></tr>
<tr><td>38</td><td>P60</td><td>IN</td><td>Signal coming from key unit.</td></tr>
<tr><td>39</td><td>RDY</td><td>IN</td><td>Connected to VCC2 (+3.3V).</td></tr>
<tr><td>40</td><td>ALE</td><td>OUT</td><td>Terminal not used.</td></tr>
<tr><td>41</td><td>HOLD</td><td>IN</td><td>Connected to VCC2 (+3.3V).</td></tr>
<tr><td>42</td><td>HLDA</td><td>OUT</td><td>Terminal not used.</td></tr>
<tr><td>43</td><td>BCLK</td><td>IN</td><td>Connected to VCC2 (+3.3V).</td></tr>
<tr><td>44</td><td>RD</td><td>OUT</td><td>Read strobe signal is outout to the LCD.</td></tr>
<tr><td>45</td><td>WRH</td><td>OUT</td><td>Terminal not used.</td></tr>
<tr><td>46</td><td>WR</td><td>OUT</td><td>Write strobe signal is outout to the LCD.</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
</table>

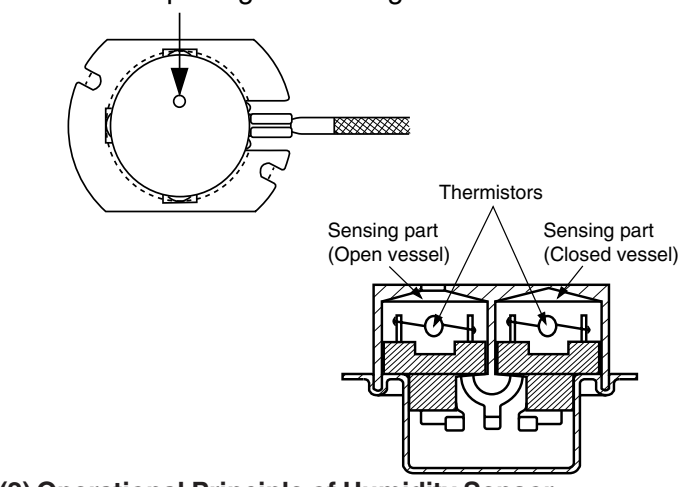
Pin No.	Signal	I/O	Description
47	P47	OUT	Reset signal is outout to the LCD.
48	CS2	OUT	Chip select signal is outout to the LCD.
49	P45	OUT	Terminal not used.
50	P44	OUT	Terminal not used.
51	P43	OUT	Signal to turn on the indicator for the Cook Top Warmer is output to the LED (LD10).
52	P42	OUT	Terminal not used.
53	P41	OUT	Power source to drive the Microwave drawer door open-close motor is output.
54	P40	IN	Terminal not used.
55	P37	OUT	Terminal not used.
56	P36	OUT	Terminal not used.
57	P35	OUT	**Cook top warmer driving signal.** To turn on and off relay(RY10). "H" level: During cook top warmer ON. "L" level: During cook top warmer OFF. 
58	P34	OUT	Terminal not used.
59 - 61	A11 - A9	OUT	Terminal not used.
62	VCC2	IN	**Power source voltage: +3.3V.** The power source voltage to drive the LSI (IC-1) is input to VCC2 terminal.
63	A8	OUT	Terminal not used.
64	VSS	IN	**Power source voltage: 0V (GND).** VS voltage of power source circuit input. Connected to GND
65 - 70	A7 - A2	OUT	Terminal not used.
71	A1	OUT	Register select signal is input to the LCD. 
72	A0	OUT	Terminal not used.
73	P17	OUT	**Signal to sound buzzer.** A: Key touch sound (short beep). B: Completion sound (melody or long beep).
74	P16	OUT	Terminal not used.
75	P15	OUT	Terminal not used.
76	P14	OUT	Terminal not used.
77	P13	OUT	"L" level: During fan motor OFF. **Fan motor (Drawer) driving signal.** To turn on and off relay(RY5). "H" level: During fan motor ON. "L" level: During fan motor OFF. 
78	P12	OUT	Terminal not used.
79	P11	OUT	Terminal not used.
80	P10	OUT	**Oven lamp and stirrer motor (drawer) driving signal.** To turn on and off relay(RY1). "H" level: During oven lamp and stirrer motor ON. "L" level: During oven lamp and stirrer motor OFF. 
81 - 88	D7 - D0	OUT	Data signal is output to LCD driver.
89	AN7	OUT	Terminal not used.

Pin No.	Signal	I/O	Description
90	AN6	IN	"L" level: During fan motor OFF. **AH sensor input.** This input is an analog input terminal from the AH sensor circuit, and connected to the A/D converter built into the LSI.
91	AN5	IN	Used for initial balancing of the bridge circuit (absolute humidity sensor). This input is an analog input terminal from the AH sensor circuit, and connected to the A/D converter built into the LSI.
92	AN4	IN	**Terminal to change the specifications of the LSI.** By using A/D converter contained in the LSI, DC voltage in accordance wityh the Model in operation is applied to set up its cooking constant.
93	AN3	IN	Input signal which inform the drawer door is in the middle position between the opened position and the closed position, to LSI from the door position switch rear.
94	AN2	IN	**Input signal which communicates the oven door locked information to LSI.** Door unlocked; "H" level signal(+5V). Door locked; "L" level signal(0V).
95	AN1	IN	**Input signal which communicates the oven door unlocked information to LSI.** Door locked; "H" level signal(+5V). Door unlocked; "L" level signal(0V).
96	AVSS	IN	**A/D converter power source voltage.** The power source voltage to drive the A/D converter in the LSI.
97	AN0	IN	Terminal not used.
98	VREF	IN	**Reference voltage input terminal.** A reference voltage applied to the A/D converter in the LSI. Connected to +5V.
99	AVCC	IN	**A/D converter power source voltage.** The power source voltage to drive the A/D converter in the LSI. Connected to Vcc1 (+5V).
100	P97	OUT	**Common relays driving signal. (Square Waveform : 60Hz)** To turn on and off the shut-off relays (RY1 and RY3). The square waveform voltage is delivered to the relays (RY1 and RY3) driving circuit. 

HUMIDITY SENSOR CIRCUIT

(1) Structure of Humidity Sensor

The humidity sensor includes two thermistors as shown in the illustration. One thermistor is housed in the closed vessel filled with dry air while another in the open vessel. Each sensor is provided with the protective cover made of metal mesh to be protected from the external airflow.

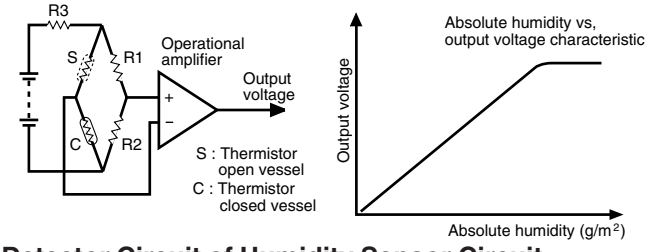


(2) Operational Principle of Humidity Sensor

The figure below shows the basic structure of an absolute humidity sensor. A bridge circuit is formed by two thermistors and two resistors (R1 and R2).

The output of the bridge circuit is to be amplified by the operational amplifier.

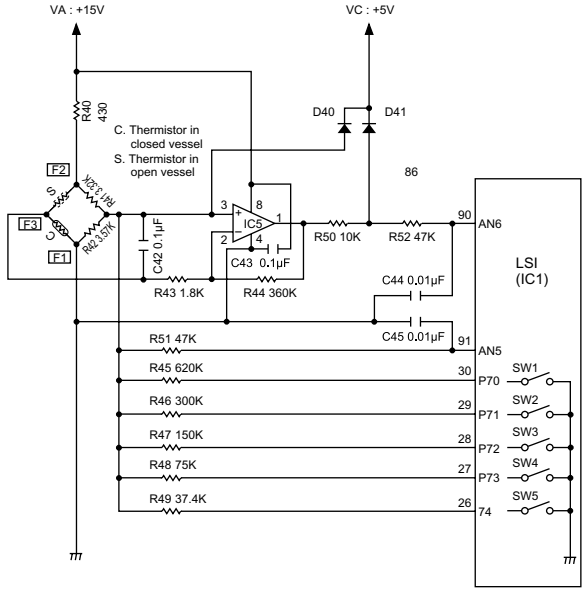
Each thermistor is supplied with a current to keep it heated at about 150°C (302°F), the resultant heat is dissipated in the air and if the two thermistors are placed in different humidity conditions they show different degrees of heat conductivity leading to a potential difference between them causing an output voltage from the bridge circuit, the intensity of which is increased as the absolute humidity of the air increases. Since the output is varied every minute, it is amplified by the operational amplifier.



(3) Detector Circuit of Humidity Sensor Circuit

This detector circuit is used to detect the output voltage of the absolute humidity circuit to allow the LSI to control sensor cooking of the unit. When the unit is set in the sensor cooking mode, 16 seconds clearing cycle occurs than the detector circuit starts to function and the LSI observes the initial voltage available at its AN5 terminal. With this voltage given, the switches SW1 to SW5 in the LSI are turned on in such a way as to change the resistance values in parallel with R45 ~ R49. Changing the resistance values results in that there is the same potential at both F-3 terminal of the absolute humidity sensor and AN5 terminal of the LSI. The voltage of AN6 terminal will indicate about +2.5V. This initial balancing is set up about 16 seconds after the unit is put in the Sensor Cooking mode. As the sensor cooking proceeds, the food is heated to generate moisture by which the resistance balance of the bridge circuit is deviated to increase the voltage available at AN5 terminal of the LSI. Then the LSI observes that voltage at AN6 terminal and compares it with its initial value, and when the comparison rate reaches the preset value (fixed for each menu to be cooked), the LSI causes the unit to stop sensor cooking; thereafter, the unit goes in the next operation automatically. When the LSI starts to detect the initial voltage at AN6 terminal 16 seconds after the unit has been put in the Sensor Cooking mode, if it is not possible to balance the bridge circuit due to disconnection of the absolute humidity sensor, ERROR will appear on the display and the cooking is stopped.

1) Humidity sensor circuit



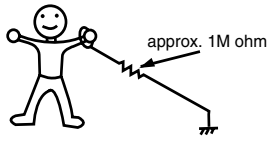
TOUCH CONTROL PANEL SERVICING

1. Precautions for Handling Electronic Components

This unit uses CMOS LSI in the integral part of the circuits. When handling these parts, the following precautions should be strictly followed. CMOS LSI have extremely high impedance at its input and output terminals. For this reason, it is easily influenced by the surrounding high voltage power source, static electricity charge in clothes, etc. and sometimes it is not fully protected by the built-in protection circuit.

In order to protect CMOS LSI.

1) When storing and transporting, thoroughly wrap them in aluminium foil. Also wrap all PW boards containing them in aluminium foil.
2) When soldering, ground the technician as shown in the figure and use grounded soldering iron and work table.



2. Servicing of Touch Control Panel

We describe the procedures to permit servicing of the touch control panel of the microwave oven and the precautions you must take when doing so. To perform the servicing, power to the touch control panel is available either from the power line of the oven itself or from an external power source.

(1) Servicing the touch control panel with power supply of the oven:

CAUTION:

THE HIGH VOLTAGE TRANSFORMER OF THE MICROWAVE OVEN IS STILL LIVE DURING SERVICING AND PRESENTS A HAZARD.

Therefore, before checking the performance of the touch control panel,

1) Disconnect the power source.
2) Open the drawer and block it open.
3) Discharge high voltage capacitor.
4) Disconnect the leads to the primary of the power transformer.
5) Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
6) After that procedure, re-connect the power supply cord.

After checking the performance of the touch control panel,

1) Disconnect the power source.
2) Open the drawer and block it open.
3) Re-connect the leads to the primary of the power transformer.
4) Reassemble the unit.
5) Re-connect the power source after the outer case is installed.
6) Run the oven and check all functions.

A. On some models, the power supply cord between the touch control panel and the oven itself is so short that the two can't be separated. For those models, check and repair all the controls (sensor-related ones included) of the touch control panel while keeping it connected to the oven.

B. On some models, the power source between the touch control panel and the oven proper is long enough that they may be separated from each other. For those models, it is possible to check and repair the controls of the touch control panel while keeping it apart from the oven proper; in this case you must short both ends of the door sensing switch (on PWB) of the touch control panel with a jumper, which activates an operational state that is equivalent to the oven drawer being closed. As for the sensor-related controls of the touch control panel, checking them is possible if dummy resistor(s) with resistance equal to that of the controls are used.

(2) Servicing the touch control panel with power supply from an external power source:

Disconnect the touch control panel completely from the oven proper, and short both ends of the drawer sensing switch (on PWB) of the touch control panel, which activates an operational state that is equivalent to the oven door being closed. Connect an external power source to the power input terminal of the touch control panel, then it is possible to check and repair the controls of the touch control panel it is also possible to check the sensor-related controls of the touch control panel by using the dummy resistor(s).

3. Servicing Tools

Tools required to service the touch control panel assembly.

1) Soldering iron: 30W
   (It is recommended to use a soldering iron with a grounding terminal.)
2) Oscilloscope: Single beam, frequency range: DC-10MHz type or more advanced model.
3) Others: Hand tools

4. Other Precautions

1) Before turning on the power source of the control unit, remove the aluminium foil applied for preventing static electricity.
2) Connect the connectors of the key unit to the control unit being sure that the lead wires are not twisted.
3) After aluminium foil is removed, be careful that abnormal voltage due to static electricity etc. is not applied to the input or output terminals.
4) Attach connectors, electrolytic capacitors, etc. to PWB, making sure that all connections are tight.
5) Be sure to use specified components where high precision is required.

PRECAUTIONS FOR USING LEAD-FREE SOLDER

1. **Employing lead-free solder**
   The "Main PWB" of this model employs lead-free solder. This is indicated by the "LF" symbol printed on the PWB and in the service manual. The suffix letter indicates the alloy type of the solder.
   Example:

Sn-Ag-Cu

Indicates lead-free solder of tin, silver and copper.

2. **Using lead-free wire solder**
   When repairing a PWB with the "LF" symbol, only lead-free solder should be used. (Using normal tin/lead alloy solder may result in cold soldered joints and damage to printed patterns.)
   As the melting point of lead-free solder is approximately 40°C higher than tin/lead alloy solder, it is recommend that a dedicated bit is used, and that the iron temperature is adjusted accordingly.

3. **Soldering**
   As the melting point of lead-free solder (Sn-Ag-Cu) is higher and has poorer wettability, (flow), to prevent damage to the land of the PWB, extreme care should be taken not to leave the bit in contact with the PWB for an extended period of time. Remove the bit as soon as a good flow is achieved. The high content of tin in lead free solder will cause premature corrosion of the bit. To reduce wear on the bit, reduce the temperature or turn off the iron when it is not required.
   Leaving different types of solder on the bit will cause contamination of the different alloys, which will alter their characteristics, making good soldering more difficult. It will be necessary to clean and replace bits more often when using lead-free solder. To reduce bit wear, care should be taken to clean the bit thoroughly after each use.

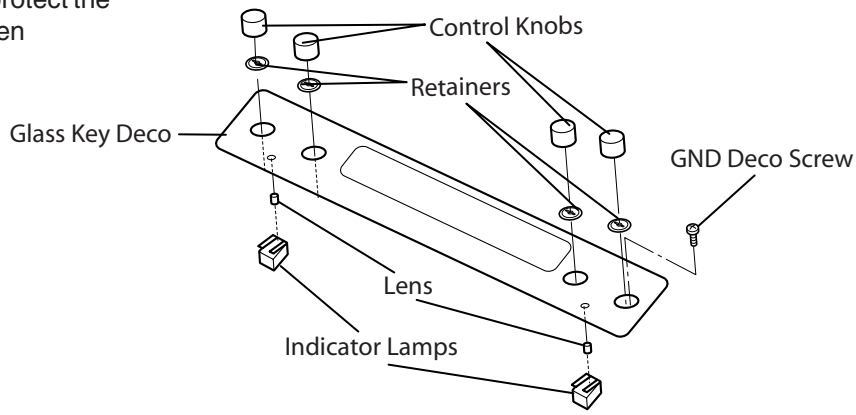
COOK TOP / MICROWAVE DRAWER DISASSEMBLY

WARNING: Follow all safety precautions beginning on Page 2 before proceeding!

CAUTION: Before performing any of the disassembly, disconnect the power source!

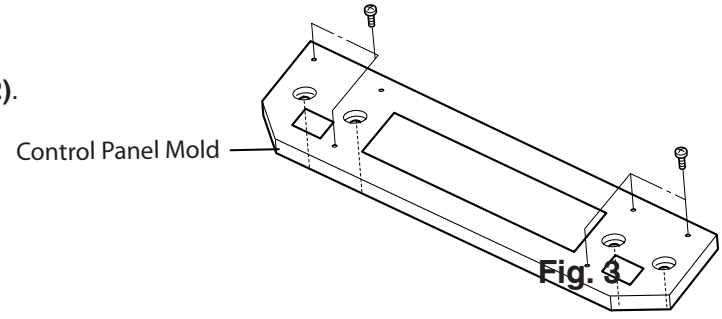
1. Before removing Control Panel, take measures to protect the Cook Top surface and keep Microwave Drawer open to prevent scratches.
2. Remove all Control Knobs **(Fig 1)**.
3. Unscrew all Retainers **(Fig 1)**.
4. Unscrew Glass Key Deco screw (1) **(Fig 1)**.
5. Carefully lift Glass Key Deco and unhook Indicator Lamp from Lens **(Fig 1)**.

Fig. 1



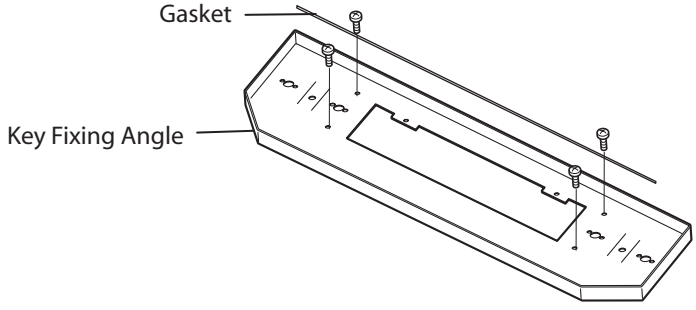
6. Remove all screws from Control Panel Mold **(Fig 2)**.
7. Slide Control Panel Mold to left (to unlock) and lift **(Fig 2)**.

Fig. 2

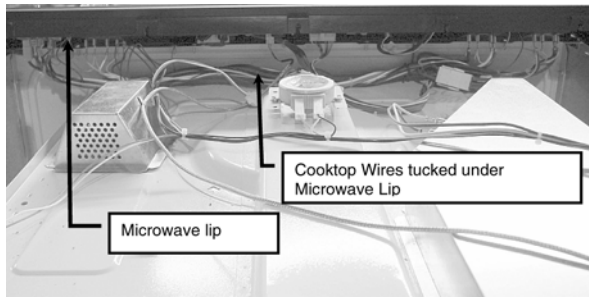


8. Remove Gasket from Key Fixing Angle **(Fig 3)**. unscrew (4) screws holding key fixing mold.
9. Lift Key Fixing Mold and carefully unhook all Molex's, ground wire and C/P wiring **(Fig 3).**

Fig. 3



NOTE: When reassembling, it is very important that all Cook Top wires are tucked under the Microwave cavity lip and secured with the RED WIRE STRAP. The 240v harness can create noise that can interfere with C/P function (example: intermittent or no keyboard operation).



10. Remove screws from Control Panel Frame **(Fig 4)**.

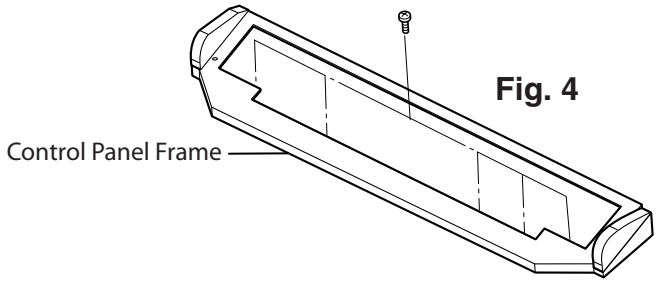


Fig. 4

11. Slide Cook Top forward to unlock from shoulder screws, then remove or reposition **(Fig. 5)**.

    Before you can Slide the Cook Top forward to unlock it from shoulder screws, you must remove nine (9) screws from each right, left and back slide angles **(Fig. 5A).**

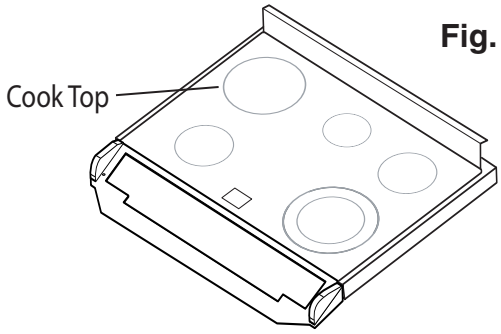
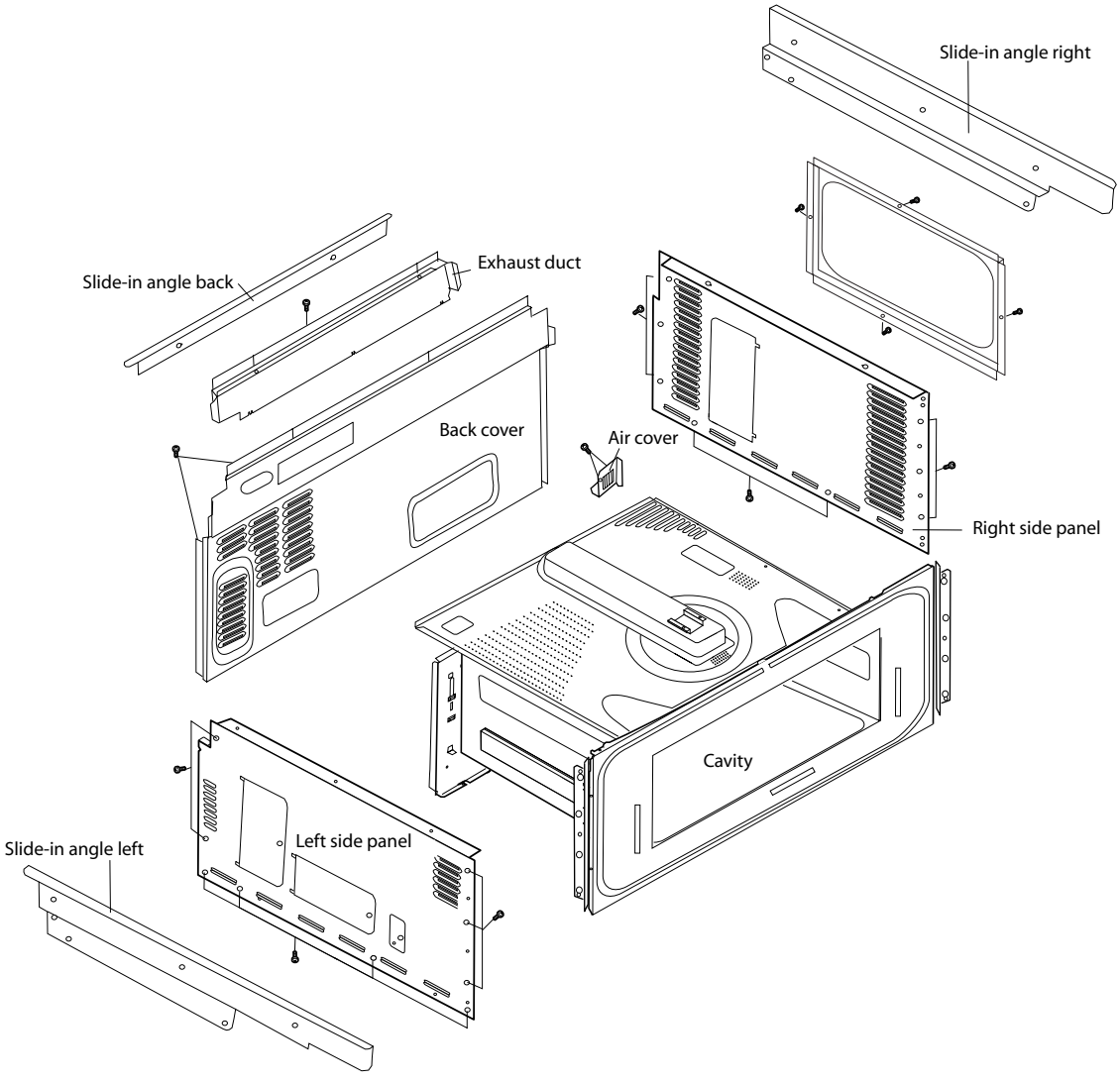


Fig. 5

12. After removing Slide Angles**,** remove all screws from the Exhaust Duct, right/left side Panels and back/ air covers **(Fig. 5A).**

Fig. 5A



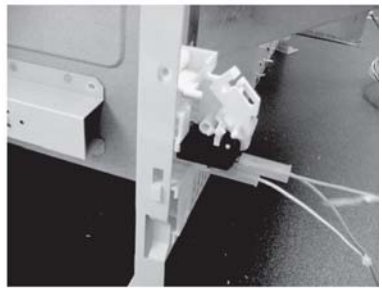
STOP SWITCH, SECONDARY INTERLOCK SWITCH AND MONITOR SWITCH REMOVAL

1. Disconnect the power source.
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Remove the Cook Top.
5. Remove the Cook Top Stay (right or left).
6. Remove the screw holding the latch hook to the oven flange.
7. Remove the latch hook from the oven flange.
8. Disconnect the wire leads of each switch.
9. Remove each switch from the latch hook by pushing the one (1) stopper tab holding each switch.
10. Now, each switch is free.

Re-install

1. Re-install each switch in its place. The secondary interlock switch is in the lower position and the monitor switch is in the top position, located on the left side of the unit. The door sensing switch by itself on the right side of the unit.
2. Re-connect wire leads to each switch. Refer to pictorial diagram.
3. Secure the latch hooks with mounting screws to oven flange.
4. Make sure that the monitor switch is operating properly and check continuity of the monitor circuit. Refer to chapter "Test Procedure" and "Adjustment procedure".

Latch Hook Left



Latch Hook Right

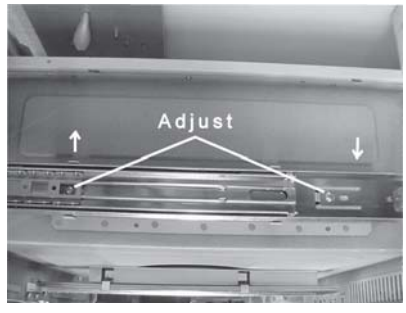
STOP SWITCH, SECONDARY INTERLOCK SWITCH AND MONITOR SWITCH ADJUSTMENT

1. Disconnect the power source.
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Remove the Cook Top.
5. Remove the Cook Top Stay (right or left). If the door sensing switch, secondary interlock switch and monitor switch do not operate properly due to a misadjustment, the following adjustment should be made.
6. Loosen the screw holding latch hook to the oven cavity flange.
7. With drawer closed, adjust latch hook by moving it back and forth, and up and down. In and out play of the door allowed by the upper and lower position of the latch hook should be less than 0.5mm. The vertical position of the latch hook should be adjusted so that the secondary interlock switch is activated with the drawer closed. The horizontal position of the latch hook should be adjusted so that the monitor switch and drawer sensing switch are activated with the drawer closed.
8. Secure the screws with washers firmly.
9. Check all of the switches operation. If any switch has not activated fully, you will need to adjust the slide rail attached to the Microwave cavity.
10. This is done by following the steps to remove the "DRAWER/SLIDE RAIL REMOVAL" on page 42. After you have removed the slide rails, loosen the "2" screws holding the slide rail to the Microwave cavity and tilt the front end up and the rear end down, then tighten the screws **(Fig. S-1)**.
11. Check and assure that the cap nuts on the Drawer Support Angles are centered when passing through the cavity face plate.

After adjustment, check the following.

1. In and out play of door remains less than 0.5mm when in the latched position. First check upper position of latch hook, pushing and pulling upper portion of drawer toward the oven face. Then check lower portion of the latch hook, pushing and pulling lower portion of the door toward the oven face. Both results (play in the door) should be less than 0.5mm.
2. The secondary interlock switch switch interrupt the circuit before the door can be opened.
3. Monitor switch contacts close when door is opened.
4. Door sensing switch contacts open when door is opened.
5. Reassemble the unit and check for microwave leakage around door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.

Fig. S-1



DRAWER/SLIDE RAIL REMOVAL

DRAWER ASSEMBLY AND CHOKE REMOVAL

1. Disconnect the power source.
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Remove the both right and left Cook Top Stays.
5. Remove (2) Drawer Support Covers from Choke Cover as shown in **(Fig. D-1)**.
6. Insert a putty knife (thickness of about 0.5mm) into the gap between the choke cover and the door frame.
7. Carefully slide choke cover away from drawer as far as possible.
8. Remove (6) screws from all (3) drawer Support Angles as shown in **(Fig. D-2)**.
9. Unhook Drawer Support Angles from drawer, then remove.
10. Now, the door assembly is free and the Choke Cover can now be removed.

NOTE:

To remove only the Microwave Drawer, follow steps 1, 2, 5, 8, 9 & 10 as instructed under "DRAWER ASSEMBLY AND CHOKE REMOVAL".

Fig. D-1

DRAWER SUPPORT ANGLE REMOVAL

1. Remove Drawer Assembly and Choke Cover as stated in "DRAWER ASSEMBLY AND CHOKE REMOVAL".
2. Remove (2) screws from right or left Latch Angle Assembly, then remove Angle assembly **(Fig. D-4)**.
3. Separate Slide Rails by moving inside lever of Slide Rails. The Slide Rail will now separate by pulling straight forward and out **(Fig. D-3)**.
4. At this point, you can replace either Latch Angle Assy or Latch Angles.

To reassemble, just reverse the above order.

Fig. D-2

Fig. D-3

After reassembly, do the following.

(A) Make sure that drawer sensing switch, secondary interlock switch and monitor switch are operating properly. (Refer to chapter "Test Procedures".)

(B) An approved microwave survey meter should be used to assure compliance with proper microwave radiation emission limitation standards.

After any servicing, make sure of the following :

1. Drawer latch heads smoothly catch latch hook through latch holes and that latch head goes through center of latch hole.
2. Deviation of door alignment from horizontal line of cavity face plate is to be less than 1.0mm.
3. Drawer is positioned with its face pressed toward cavity face plate.
4. Reassemble the unit and check for microwave leakage around drawer with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

Note: The drawer on a microwave oven is designed to act as an electronic seal preventing the leakage of microwave energy from oven cavity during cook cycle. This function does not require that door be air-tight, moisture (condensation)-tight or light-tight. Therefore, occasional appearance of moisture, light or sensing of gentle warm air movement around oven drawer is not abnormal and do not of themselves indicate a leakage of microwave energy from oven cavity.

Fig. D-4

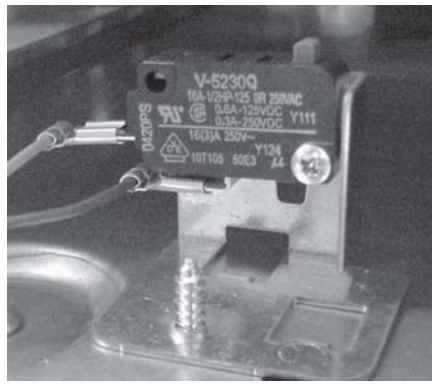
SWITCH ANGLE REMOVAL/ADJUSTMENT

SWITCH ANGLE REMOVAL

(Locate either the right or left switch angle)

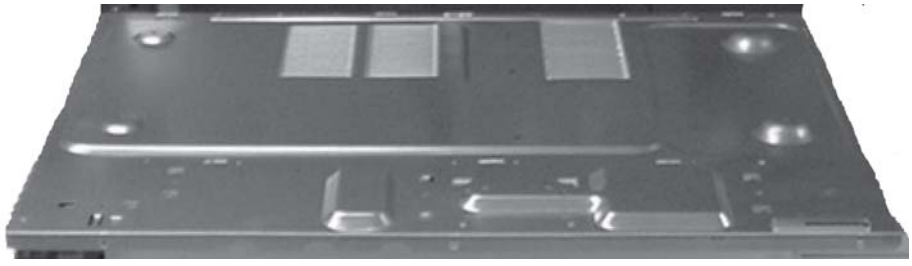
1. Follow the Microwave Drawer disassembly as previously stated.
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. To remove switch, remove screw (1) holding switch to switch angle **(Fig. S-1)**.

Fig. S-1



5. To replace switch angle, remove bottom cover and remove the 2 screws holding the switch lever **(Fig. S-2)**.
6. Proceed in reverse to reinstall.
7. Adjust switch.

Fig. S-2



ACTUATOR REMOVAL/ADJUSTMENT

1. Follow the Microwave Drawer disassembly as previously stated.
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Locate either the right or left actuator and remove the 2 screws holding the actuator to the door support angles.
5. Replace with the new actuator **(Fig. A-3)**.

Actuator adjustment

6. It is very critical that proper adjustment is made to actuator.
7. Adjust each actuator to fully depress ("0" gap) switch lever switches on left and right side **(Fig. A-4)**.

NOTE: If this adjustment is not adjusted correctly, it will effect the performance of the Auto Drawer.

Fig. A-3

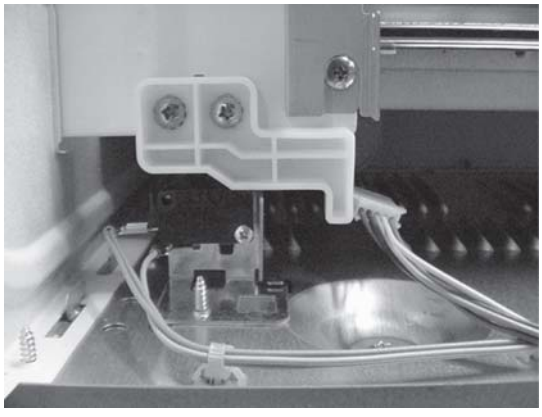
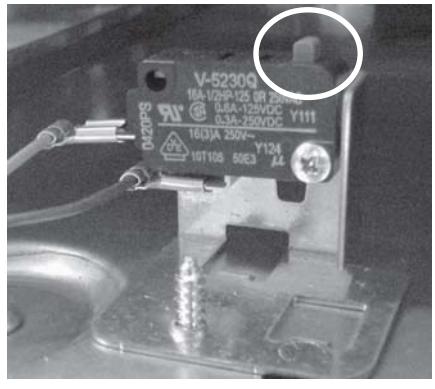


Fig. A-4



AUTO DRAWER GEAR REMOVAL

1. Follow the Microwave Drawer disassembly as previously stated.
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Unhook wiring Auto Drawer Gear**.**
5. Remove the (4) screws holding the auto drawer gear to the bottom cavity angle **(Fig. G-1)**.
5. Pull drawer gear from cavity angle.
6. The drawer gear is now free.
7. Proceed in reverse to reinstall the Auto Drawer Gear taking care that the gear teeth are set into the cavity angle correctly.

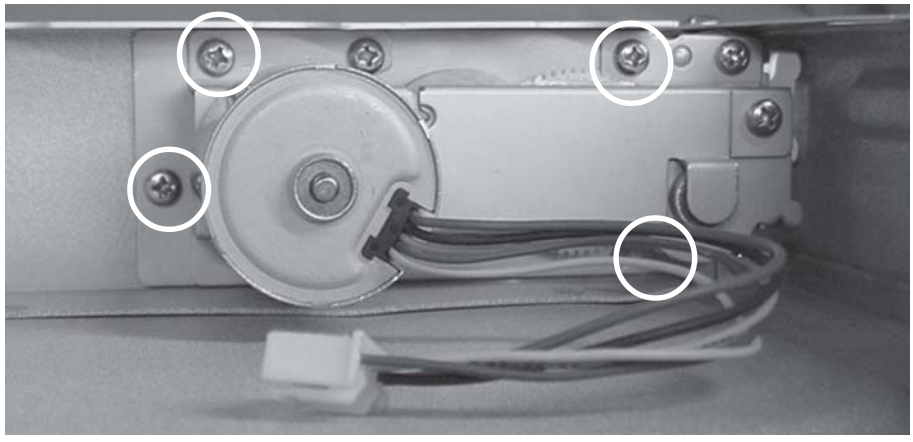


Fig. G-1

RACK GEAR REMOVAL

1. Follow the Microwave Drawer disassembly as previously stated.
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Remove the Microwave Drawer by following steps 1, 2, 5, 8, 9 & 10 as instructed under "DRAWER ASSEMBLY AND CHOKE REMOVAL".
5. Remove the (3) screws holding the Rack Gear to the bottom slide rail **(Fig. G-2)**.
7. Proceed in reverse to reinstall the new Rack Gear.

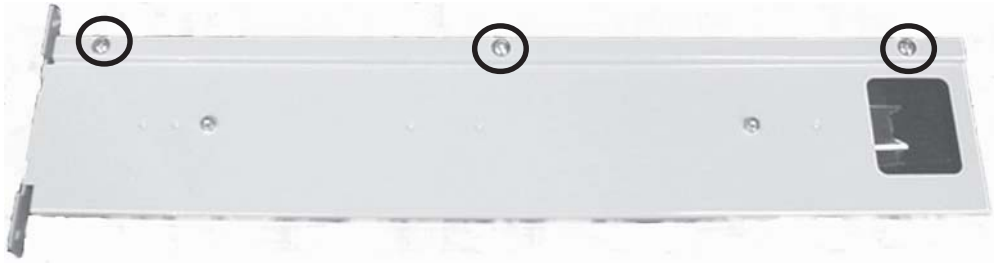


Fig. G-2

COOK TOP RADIANT HEATERS/HOT SURFACE INDICATOR REMOVAL

1. Disconnect the power source.
2. Refer to the disassembly instructions as previously stated.
3. After Cook Top Assembly is free, turn upside down (glass side down) on a protective surface to prevent scratching **(Fig. O-13)**.
4. Remove the (10) screws from Bottom Plate and place to the side.
5. Remove Heater Protect Cover **(Fig. O-14)**.
6. Remove necessary spring strap from Radiant Element.
7. Unhook Radiant Element or Hot Surface Indicator wiring.
8. The Radiant Elements are now free.
9. Proceed in reverse to reinstall the Radiant Elements and/or Hot Surface Indicator.

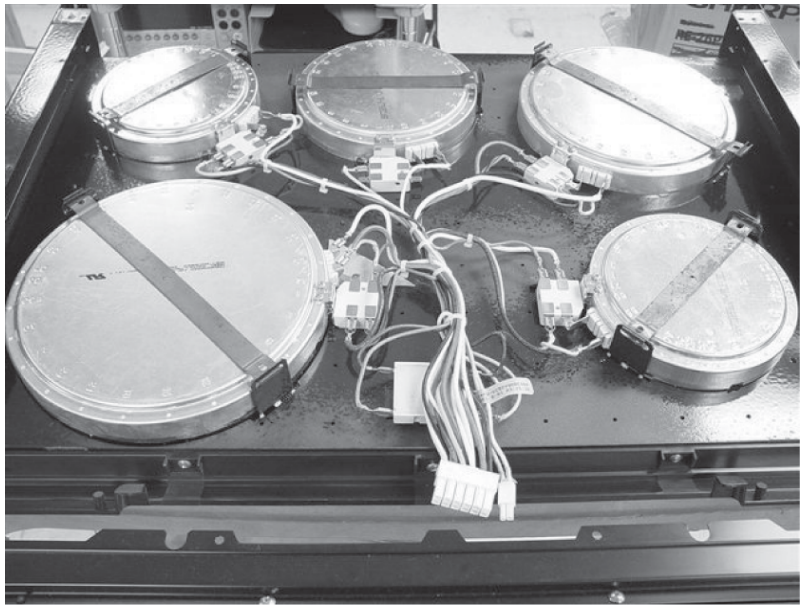


Fig. O-13

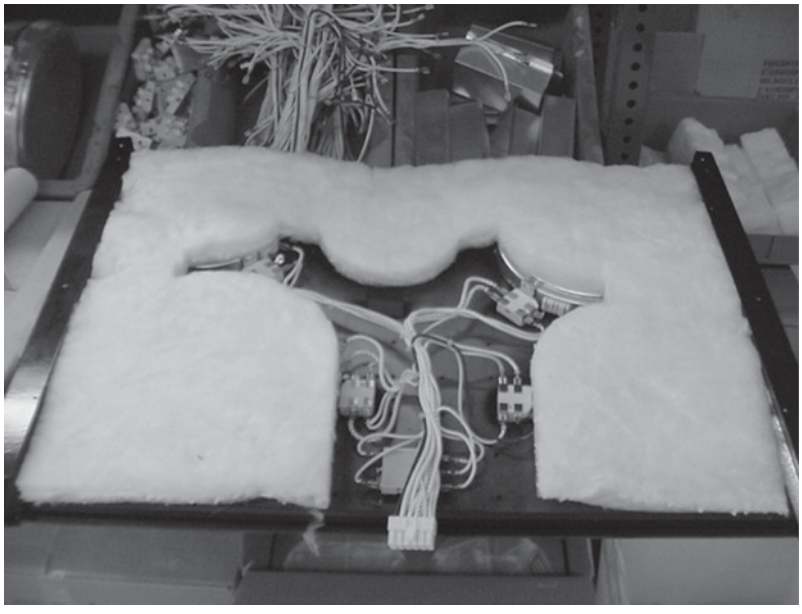
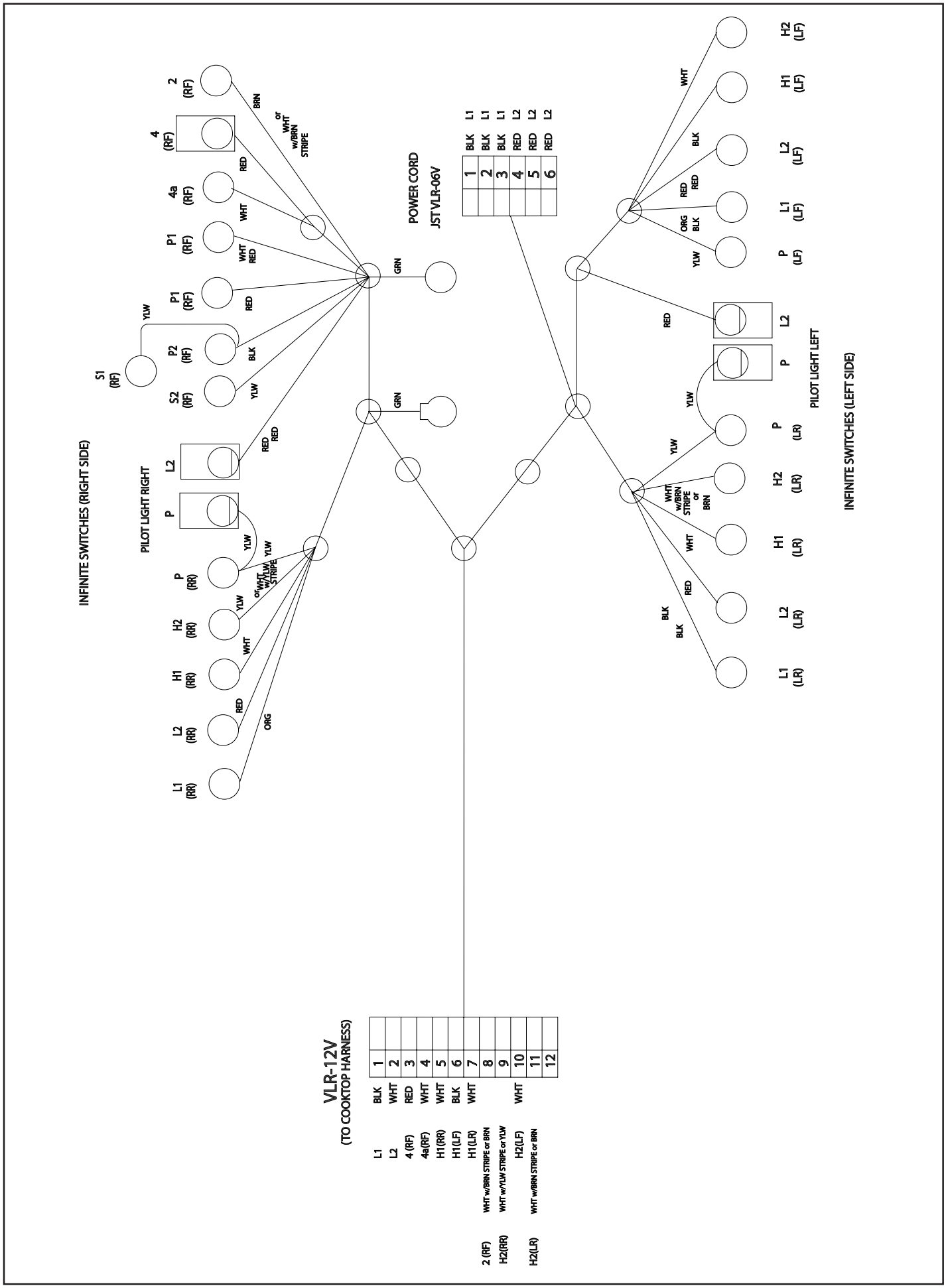
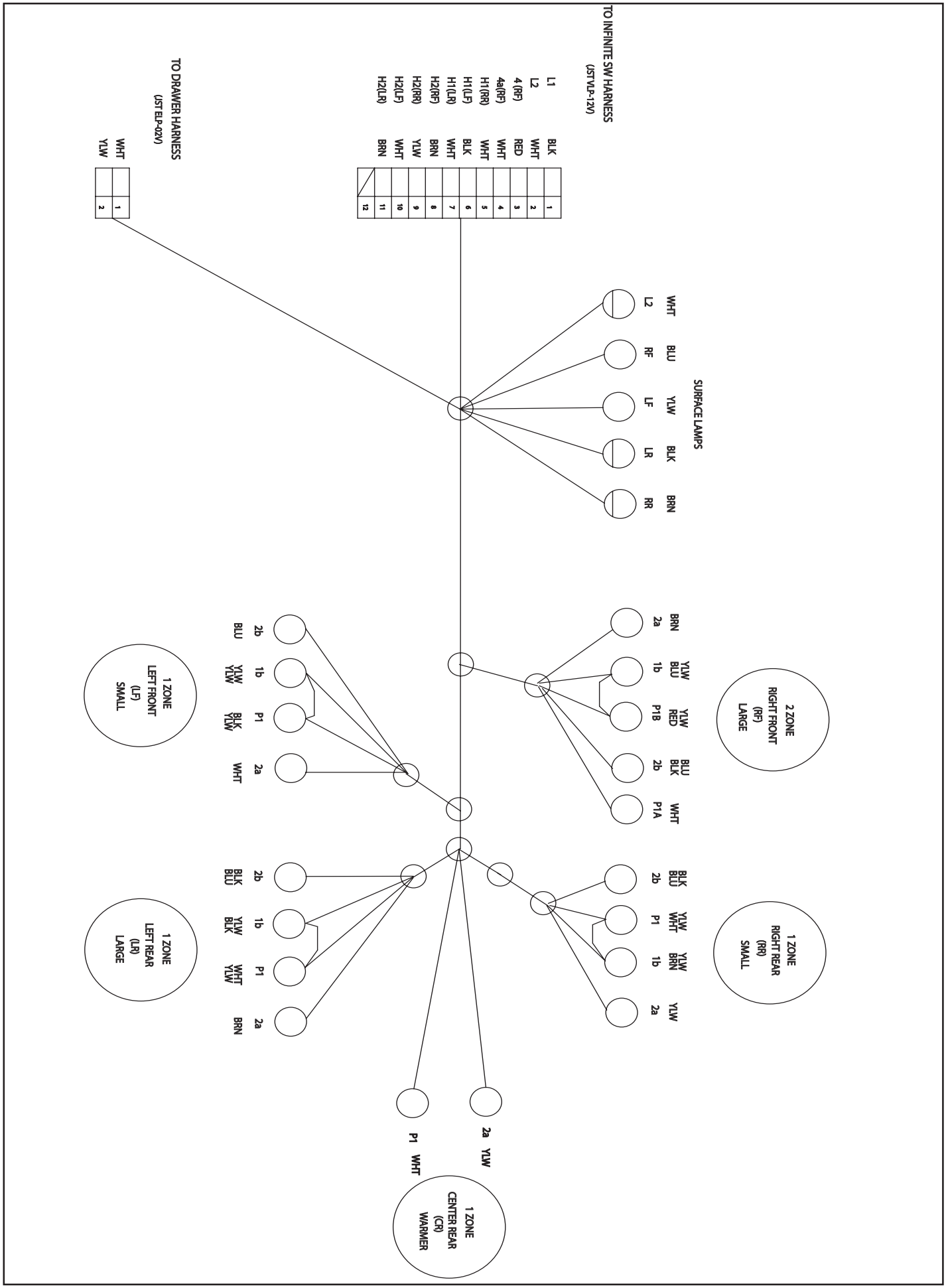


Fig. O-14

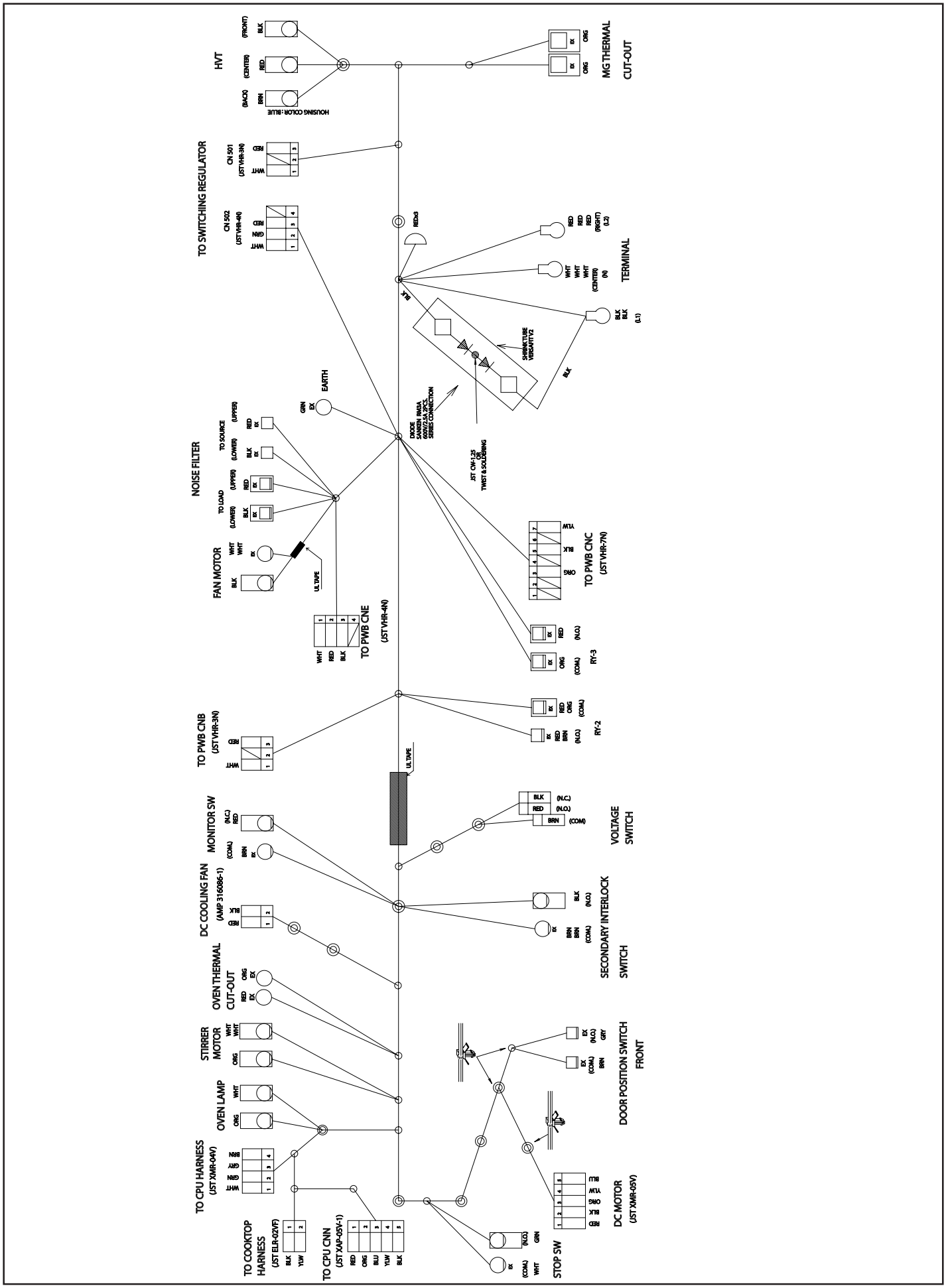
CONTROL PANEL WIRING DIAGRAM



COOK TOP WIRING DIAGRAM



MICROWAVE DRAWER WIRING DIAGRAM



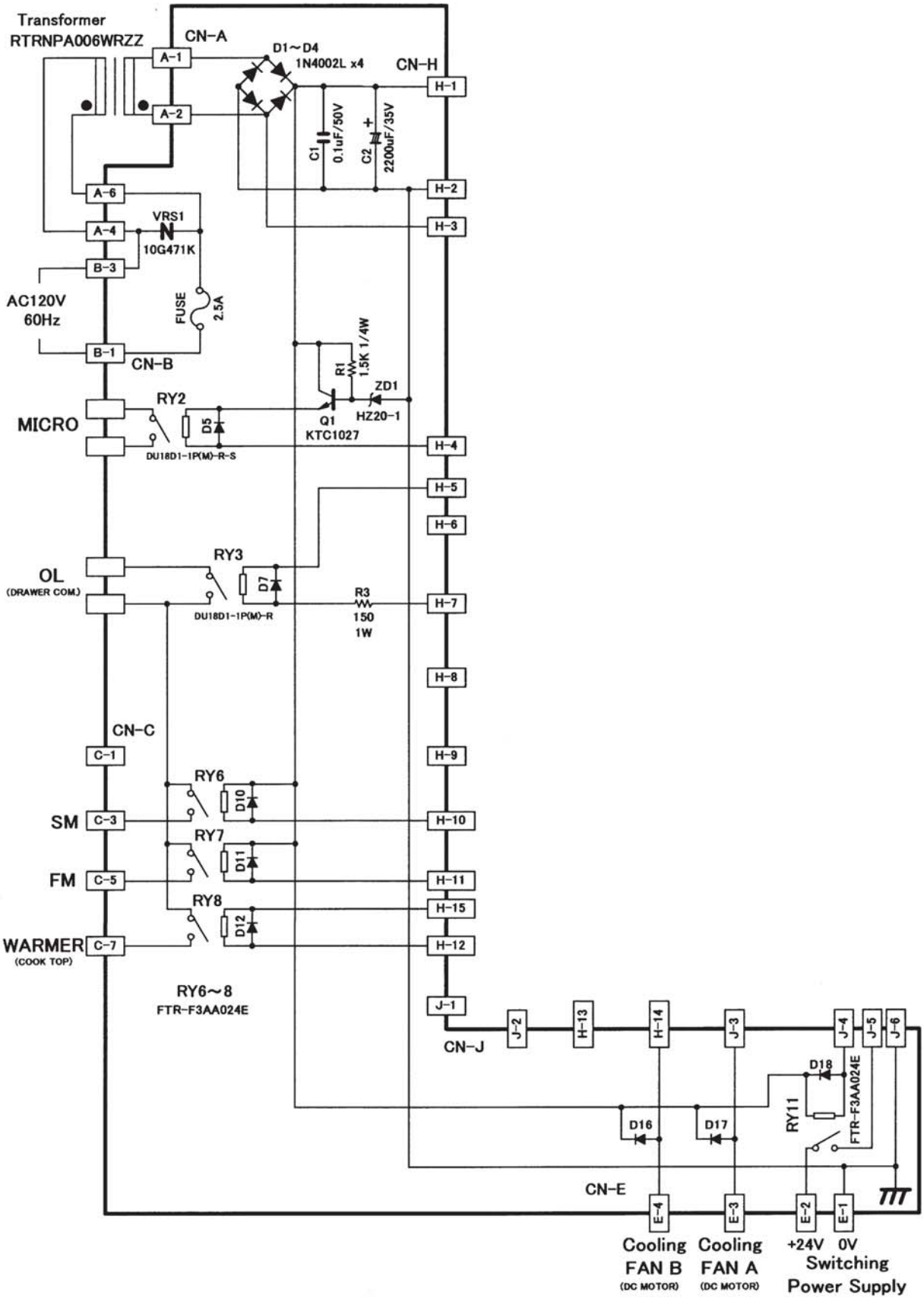


Figure S-2. Power Unit Circuit

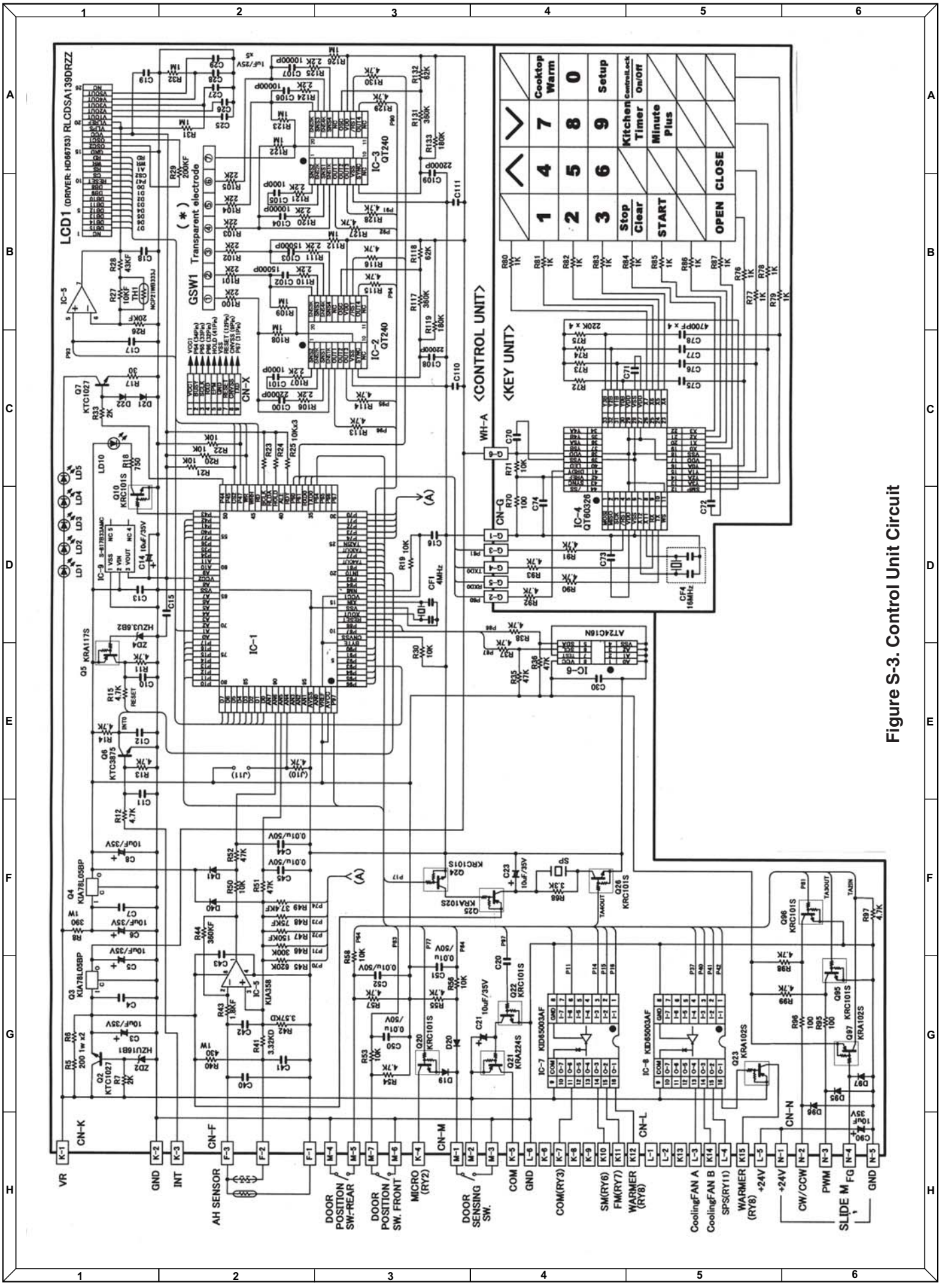


Figure S-3. Control Unit Circuit

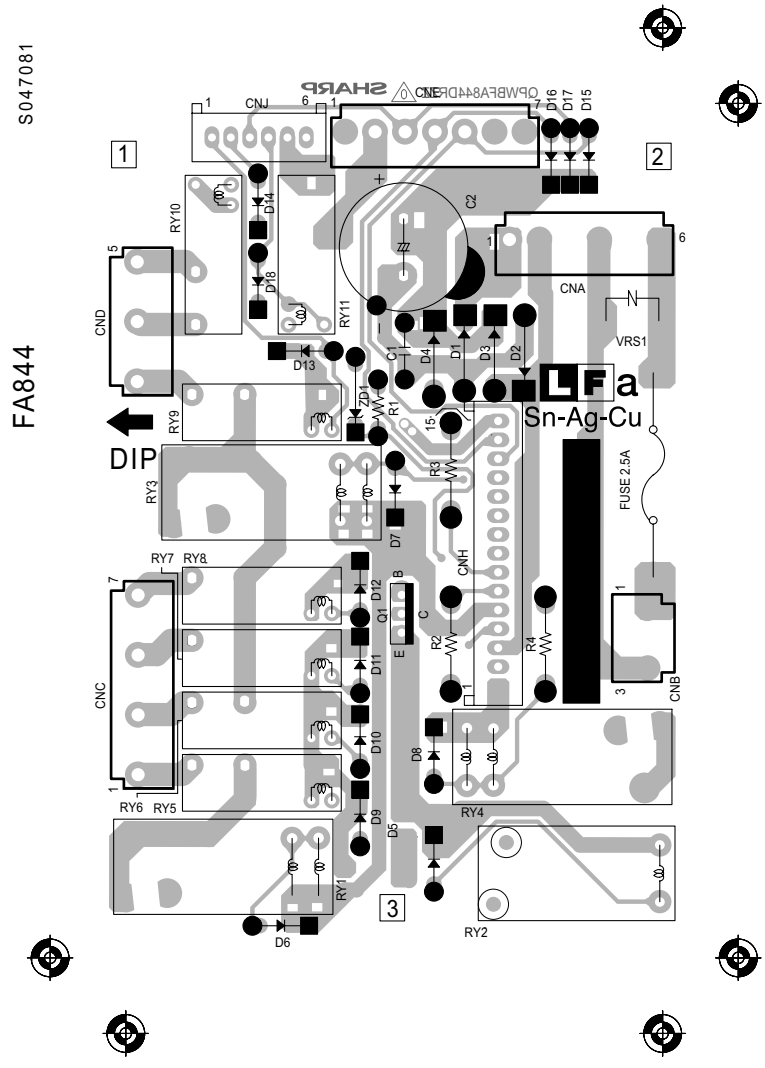
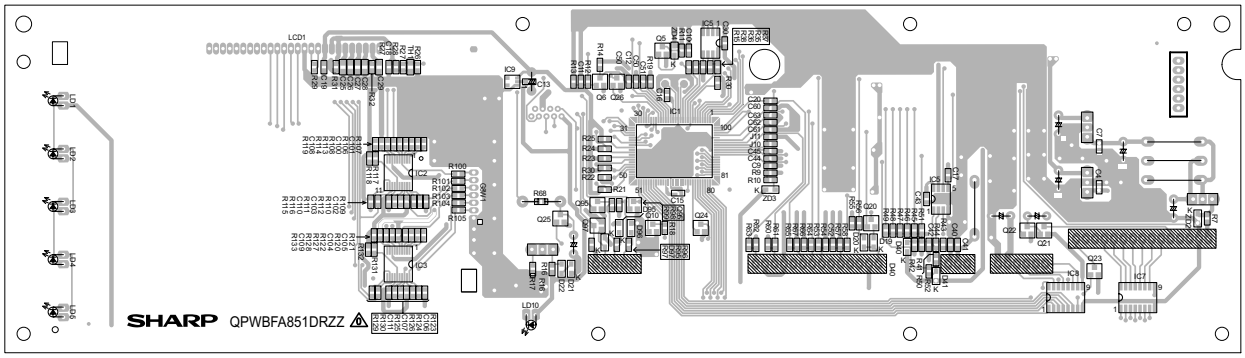


Figure S-4. Printed Wiring Board of Power Unit



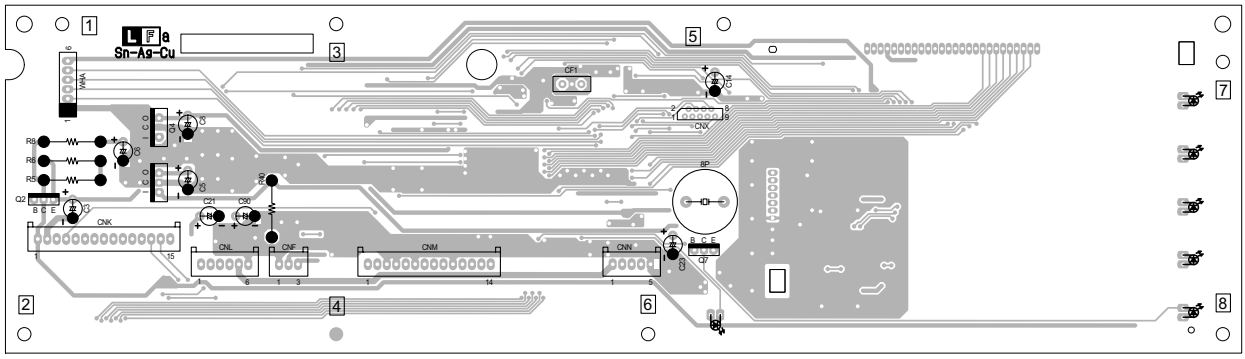


Figure S-5. Printed Wiring Board of Control Unit

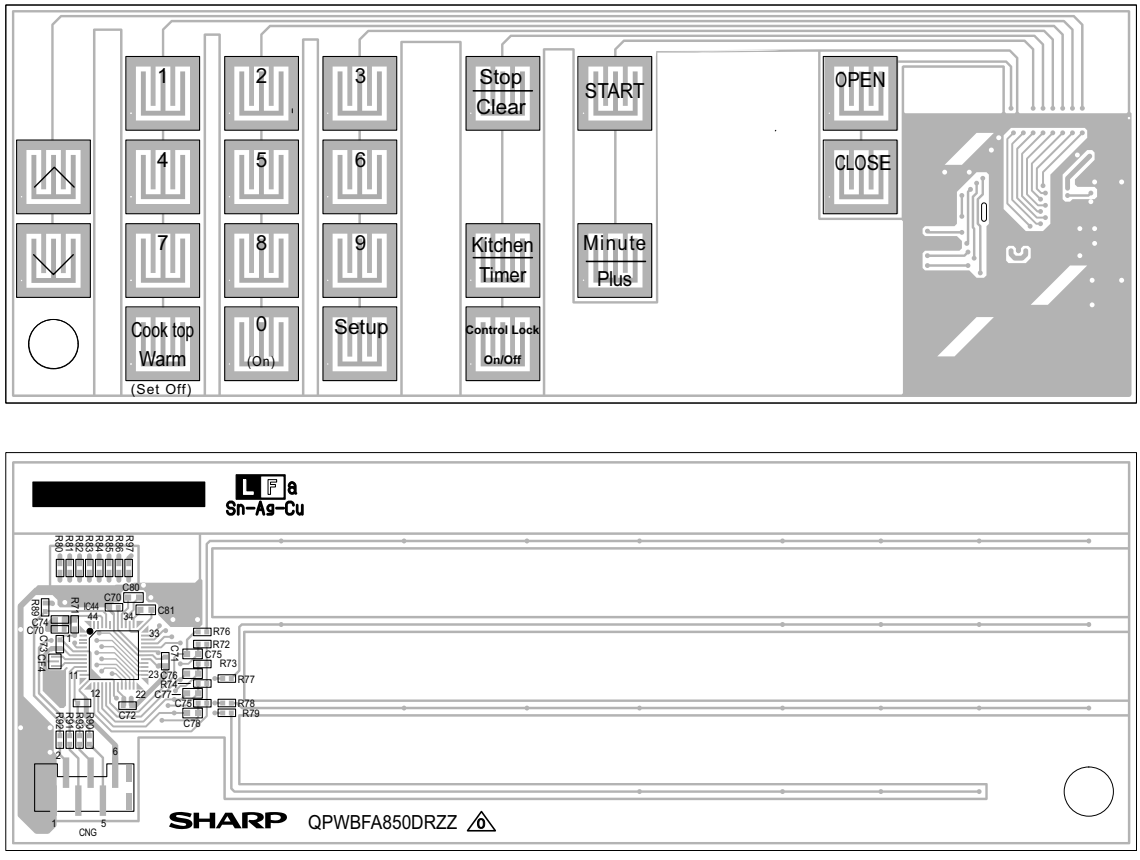


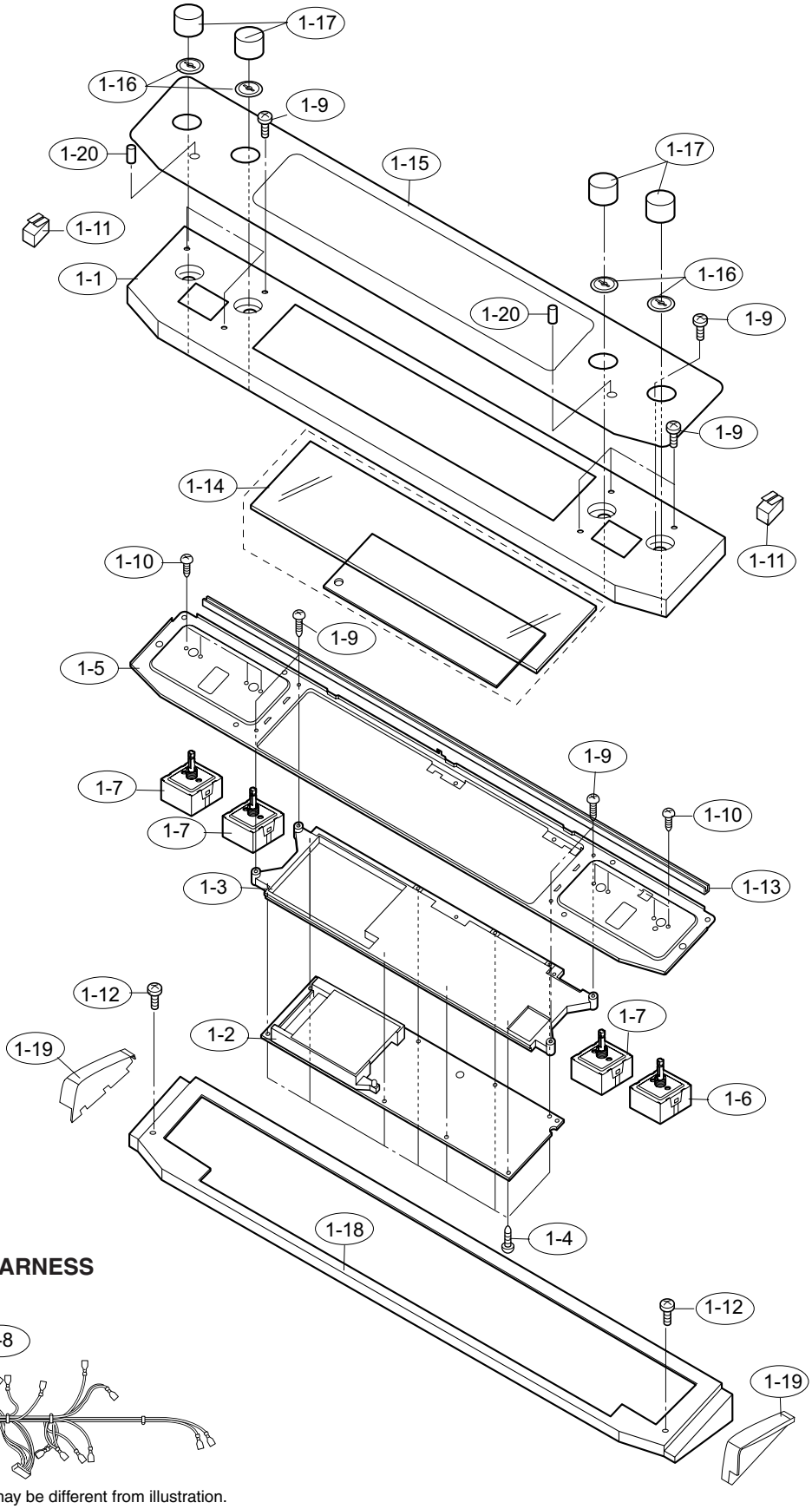
Figure S-5. Printed Wiring Board of Keyboard Unit

CONTROL PANEL PARTS LIST

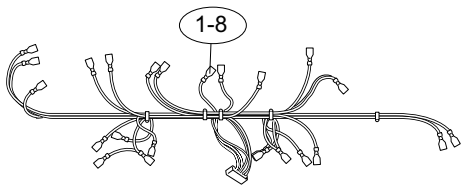
Note: The parts marked "Δ" may cause undue microwave exposure.
The parts marked "*" are used in voltage more than 250V. **"§" MARK: PARTS DELIVERY SECTION**

REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
1- 1	HPNLCB200MRF0	M	Control panel mold	1	AS
1- 2	DPWBFB142MRU0	M	Control unit	1	CB
1- 3	LHLD-B029MRF0	M	PWB holder	1	AN
1- 4	XEPS730P08XS0	M	Screw : 3mm x 8mm	5	AB
1- 5	LANGQB072MRP0	M	Key fixing angle	1	AQ
1- 6	QSWTEB002MRE0	M	Double control	1	AW
1- 7	QSWTEB006MRE0	M	Infinite switch	3	AT
1- 8	FW-VZB259MRE0	M	C/P harness	1	BA
1- 9	XBTS740P06000	M	Screw : 8mm x 6mm	8	AB
1-10	XCTS740P08000	M	Screw : 8mm x 8mm	4	AC
1-11	RLMP-B005MRE0	M	Indicator lamp	2	AF
1-12	XOTS740P12000	M	Screw	6	AB
1-12	XCTSF50P12000	M	Optional oversized screw	6	AA
1-13	PSEL-B001MRE0	M	Gasket, dark gray	1	AN
1-14	FUNTKB452MRK0	M	Glass key unit [KB5121KS] [KB5121KK]	1	BN
1-14	FUNTKB453MRK0	M	Glass key unit [KB5121KW]	1	CA
1-15	HDECQB001MRR0	M	Glass key deco [KB5121KS]	1	AK
1-15	HDECQB056MRR0	M	Glass key deco [KB5121KK]	1	AK
1-15	HDECQB057MRR0	M	Glass key deco [KB5121KW]	1	AK
1-16	LRTNPB003MRF0	M	Retainer [KB5121KS] [KB5121KK]	4	AD
1-16	LRTNPB002MRF0	M	Retainer [KB5121KW]	4	AD
1-17	FKNBKB008MRK0	M	Control knob assy [KB5121KS]	4	AL
1-17	FKNBKB009MRK0	M	Control knob assy [KB5121KK]	4	AG
1-17	FKNBKB006MRK0	M	Control knob assy [KB5121KW]	4	AD
1-18	GWAKPB202MRF0	M	C/P frame [KB5121KS] [KB5121KK]	1	AR
1-18	GWAKPB207MRF0	M	C/P frame [KB5121KW]	1	AR
1-19	HDEC-B029MRF0	M	C/P support R [KB5121KS] [KB5121KK]	1	AL
1-19	HDEC-B031MRF0	M	C/P support R [KB5121KW]	1	BQ
1-19	HDEC-B030MRF0	M	C/P support L [KB5121KS] [KB5121KK]	1	AY
1-19	HDEC-B032MRF0	M	C/P support L [KB5121KW]	1	AM
1-20	PLNS-B003MRE0	M	Lens	2	AA

CONTROL PANEL



CONTROL PANEL HARNESS

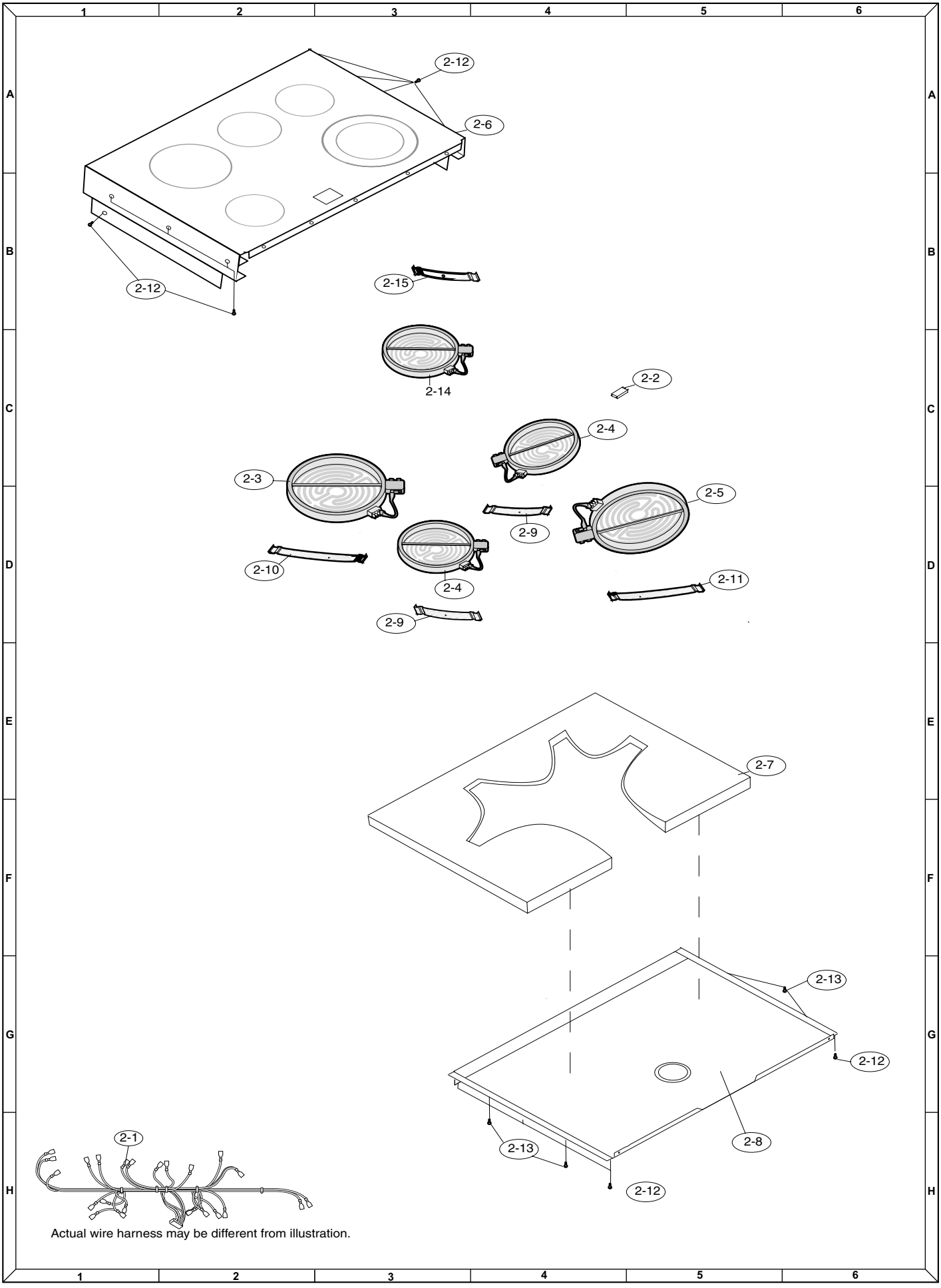


Actual wire harness may be different from illustration.

COOK TOP PARTS LIST

Note: The parts marked "Δ" may cause undue microwave exposure.
The parts marked "*" are used in voltage more than 250V. **"§" MARK: PARTS DELIVERY SECTION**

	REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
	2- 1	FW-VZB303MRE0	M	Cook top harness	1	AY
	2- 2	RLMP-B001MRE0	M	Surface indicator	1	AU
*	2- 3	RHET-B001MRE0	M	Radiant heater (2000 w)	1	BA
*	2- 4	RHET-B002MRE0	M	Radiant heater (1200 w)	2	AZ
	2- 5	RHET-B003MRE0	M	Radiant heater (Dual)	1	BD
	2- 6	FANG-B024MRY0	M	Cook top glass assy [KB5121KS] [KB5121KK]	1	CA
	2- 6	FANG-B025MRY0	M	Cook top glass assy [KB5121KW]	1	CA
	2- 7	PFPF-B017MRE0	M	Heat protect	1	AH
	2- 8	PCOVPB156MRP0	M	Heat protect cover	1	AL
	2- 9	MLEVPB018MRE0	M	6" spring strap	2	AH
	2-10	MLEVPB020MRE0	M	8" spring strap	1	AH
	2-11	MLEVPB021MRE0	M	9" spring strap	1	AH
	2-12	XOTS740P12000	M	Screw	6	AA
	2-13	LX-CZB027MRE0	M	Shoulder screw	4	AA
	2-14	RHET-B008MRE0	M	Radiant heater warm	1	BB
	2-15	MLEVPB019MRE0	M	7" spring strap	1	AK



Actual wire harness may be different from illustration.

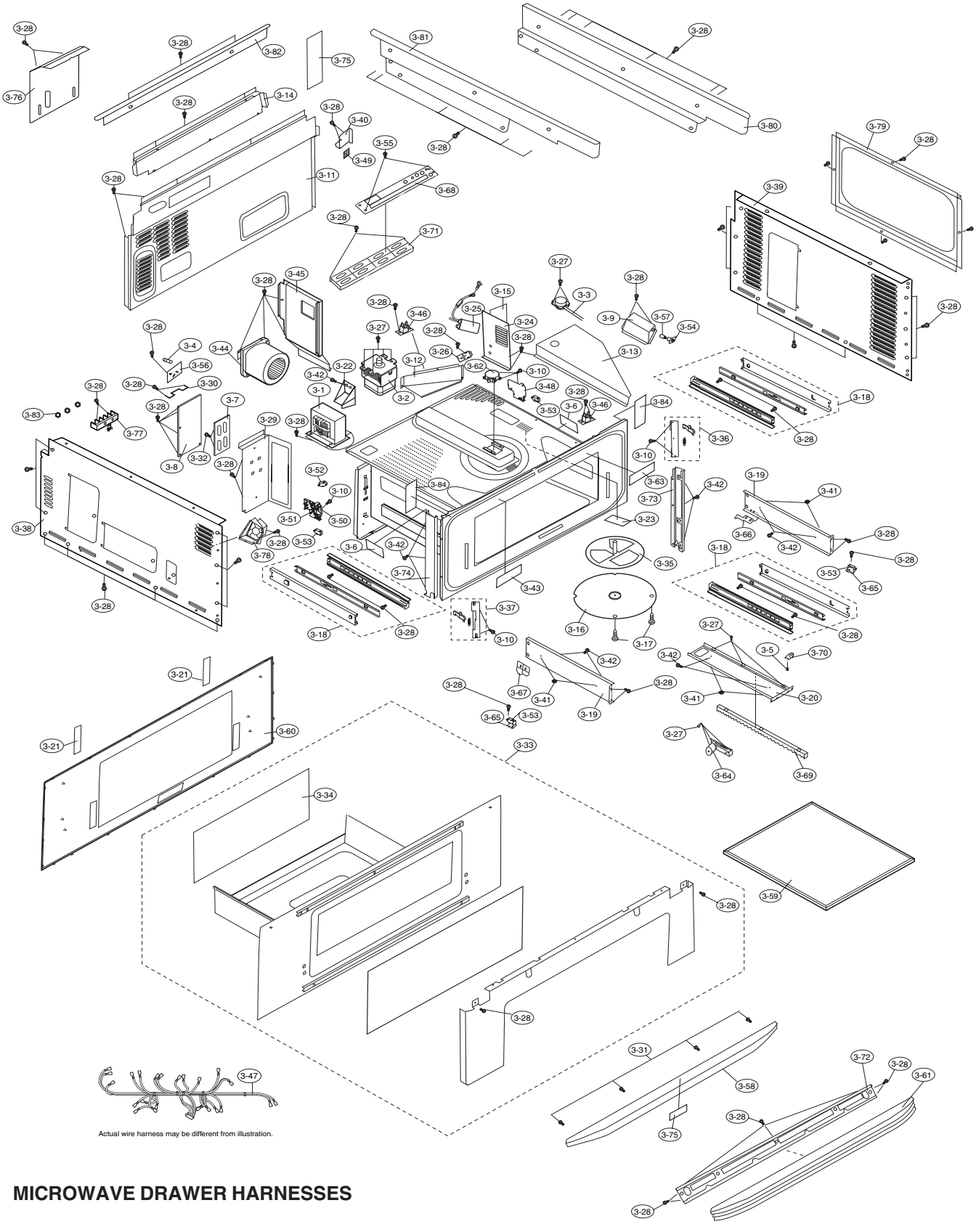
MICROWAVE DRAWER PARTS LIST

Note: The parts marked "Δ" may cause undue microwave exposure.
The parts marked "*" are used in voltage more than 250V. **"§" MARK: PARTS DELIVERY SECTION**

	REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
	3- 1	RTRN-B083MRE0	M	Transformer	1	BE
Δ	3- 2	RV-MZA288WRE0	M	Magnetron	1	BK
	3- 3	FDTCTA234WRKZ	M	Sensor assy	1	AP
	3- 4	FFS-BA018/KIT	M	Monitor switch (V-16G-2C25) with fuse (20A) assembly	1	AF
	3- 5	XOTS740P08000	M	Screw	1	AA
	3- 6	TCAUAB050MRR0	M	Monitor caution label	2	AD
	3- 7	LHLD-B028MRF0A	M	Power supply unit holder	1	AE
	3- 8	DPWBFB143MRU0	M	Power supply	2	BC
	3- 9	LANGTB122MRP0	M	Oven lamp angle	1	BC
	3-10	LX-CZ0052WRE0	M	Screw/washer	6	AA
	3-11	GCABDB010MRP0	M	Back plate	1	AZ
	3-12	PDUC-B141MRP0	M	Mag duct	1	AE
	3-13	PDUC-B142MRP0	M	Sensor duct	1	AK
	3-14	PDUC-B158MRP0	M	Exhaust duct A	1	AK
	3-15	PDUC-B148MRP0	M	Exhaust duct B	1	AF
	3-16	FCOVPB002MRY0	M	Stir cover assy	1	AM
	3-17	PCLICB003MRE0	M	Canoe clip	3	AB
	3-18	MSLIFB001/KIT	M	Slide rail	3	AV
	3-19	LANGTB120MRP0	M	Door support angle A	2	AS
	3-20	LANGTB121MRT0	M	Door support angle B	1	AR
	3-21	GCOVHB051MRF0	M	Door support cover	2	AB
	3-22	PSKR-B018MRP0	M	Magnetron air guide	1	AC
	3-23	PFILWB005MRP0	M	Lamp filter	1	AB
	3-24	LANGTB076MRP0	M	Partition angle	1	AK
*	3-25	FC-QZB048MRK0	M	HVC assy	1	AP
	3-26	LBNDKB007MRP0	M	HVC band	1	AB
	3-27	XCBS730P08000	M	Screw	3	AA
	3-28	XOTS740P12000	M	Screw	90	AA
	3-29	LANGTB156MRP0	M	Partition angle L	1	AN
	3-30	LANGQA581WRPZ	M	Noise unit angle	1	AD
	3-31	LX-CZ0052WRE0	M	Screw	4	AA
	3-32	XEPS730P10XS0	M	Power unit assy screw	2	AC
	3-33	DDORFB098MRK0	M	Door assy [KB5121KS]	1	BU
	3-33	DDORFB102MRK0	M	Door assy [KB5121KK]	1	BU
	3-33	DDORFB103MRK0	M	Door assy [KB5121KW]	1	BU
	3-34	PSHEPB184MRE0	M	Sealer film	1	AQ
	3-35	FFAN-B008MRK0	M	Stirrer fan assy	1	AK
	3-36	FANGTB010MRK0	M	Latch angle assy R	1	AH
	3-37	FANGTB011MRK0	M	Latch angle assy L	1	AH
	3-38	LANGTB141MRP0	M	Side cabinet L	1	AL
	3-39	LANGTB142MRP0	M	Side cabinet R	1	AL
	3-40	PCOVPB143MRP0	M	Air cover	1	AE
	3-41	LX-NZB006MRE0	M	Cap nut	6	AA
	3-42	XHTS740P08RV0	M	Screw	4	AA
	3-43	TCAUKB001MRR0	M	Stirrer cover cleaning label	1	AA
	3-44	FMOTEA499WRKZ	M	Fan motor	1	AY
	3-45	LANGTB155MRP0	M	Fan motor angle	1	AK
	3-46	RTHM-A135WRZZ	M	Thermal cut-out	2	AD
	3-47	FW-VZB300MRE0	M	Harness assy	1	AX
	3-48	PHOK-A079WRF0	M	Latch hook R	1	AH
	3-49	PCUSGB066MRP0	M	Cushion	1	AB
	3-50	PHOK-A080WRF0	M	Latch hook L	1	AF
	3-51	MLEVPA214WRF0	M	Switch lever L	1	AK
	3-52	QSW-MA---WRE0	M	Monitor switch - must replace by assy. (3-4)	1	AE
	3-53	QSW-MA085WRE0	M	Switch	4	AE
	3-54	QSOCLB010MRE0	M	Lamp socket	1	AG
	3-55	XEPS730P10XS0	M	Screw	2	AA
	3-56	FPWBFA380WRKZ	M	Noise filter unit	1	AM
	3-57	RLMPTA093WRZZ	M	Oven lamp	1	AD
	3-58	JHNDPB058MRT0	M	Door handle [KB5121KS]	1	BC
	3-58	JHNDPB059MRT0	M	Door handle [KB5121KK]	1	BC
	3-58	JHNDPB060MRT0	M	Door handle [KB5121KW]	1	BC

REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
3-59	FGLSPB002MRY0	M	Oven tray assy	1	BC
3-60	GCOVHB052MRF0	M	Choke cover	1	AT
3-61	PDIF-B053MRT0	M	Louver [KB5121KS]	1	AX
3-61	PDIF-B054MRT0	M	Louver [KB5121KK]	1	AX
3-61	PDIF-B055MRT0	M	Louver [KB5121KW]	1	AX
3-62	RMOTDA262WRZZ	M	Stirrer motor	4	AH
3-63	TCAUHB009MRR0	M	User caution label	1	AA
3-64	FANGTB014MRK0	M	Auto drawer gear assy	1	BK
3-65	LANGTB105MRP0	M	Switch angle	2	AE
3-66	MACT-B001MRF0	M	Actuator R	1	AD
3-67	MACT-B002MRF0	M	Actuator L	1	AD
3-68	DPWBFC526WRKZ	M	SW power supply	1	BM
3-69	NGERRB004/KIT	M	Rack gear	2	BN
3-70	FROLPB029MRK0	M	Door support roller assy	1	AG
3-71	LHLD-B031MRF0	M	Switch PSU holder	1	AC
3-72	LANGTB108MRP0	M	Louver angle	1	AM
3-73	HDECQB078MRT0	M	Side filler angle R	1	AQ
3-74	HDECQB079MRT0	M	Side filler angle L	1	AQ
3-75	TMAPCB104MRR0	M	Schematic	1	AB
3-76	LANGKB031MRP0	M	Anti-tip bracket	1	AL
3-77	QCNCYB002MRE0	M	Terminal block	1	AE
3-78	FMOT-B001MRK0	M	DC motor assy	1	AR
3-79	PCOVPB159MRP0	M	Side cover	1	AX
3-80	LANGTB143MRT0A	M	Slide angle R	1	AG
3-81	LANGTB144MRT0A	M	Slide angle L	1	AG
3-82	LANGTB145MRT0	M	Slide angle back	1	AA
3-83	LX-NZB007MRE0	M	Block nuts	3	AA
3-84	PCUSUB032MRP0	M	Cushion	2	AE

MICROWAVE DRAWER



Actual wire harness may be different from illustration.

MICROWAVE DRAWER HARNESSES

BOTTOM COVER PARTS LIST

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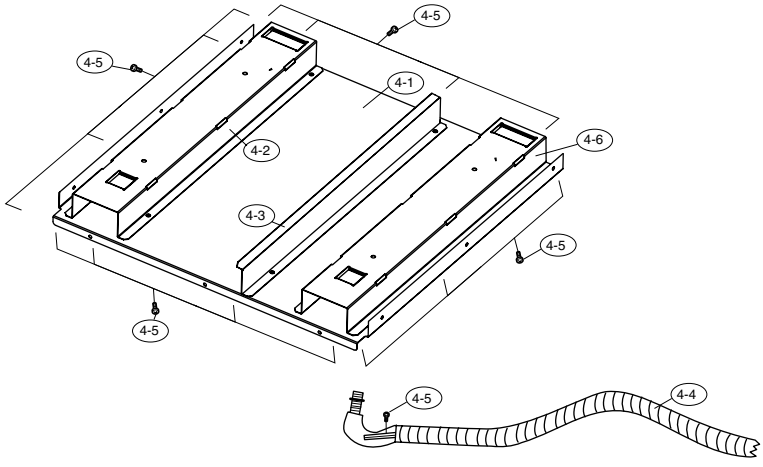
REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
4- 1	PCOVPB157MRP0	M	Bottom cover	1	AX
4- 2	LANG-B038MRP0	M	Air guide L	1	AL
4- 3	PSKR-B019MRP0	M	Partition angle btm	1	AH
4- 4	FDUC-B069MRK0	M	Power duct assy	1	BC
4- 5	XOTS740P12000	M	Screw	15	AB
4- 6	LANG-B026MRP0	M	Air guide R	1	AP



PACKING PARTS LIST

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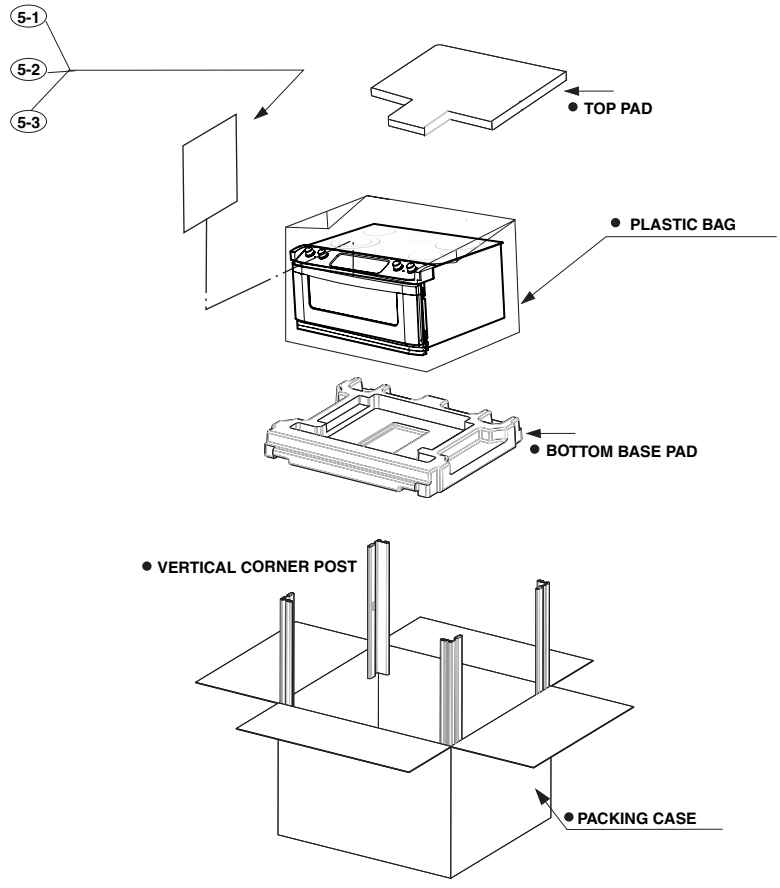
REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
5- 1	TINSEB432MRK0	M	Operation manual	1	AF
5- 2	TINSEB433MRR0	M	Installation sheet	1	AE
5- 3	XTPUW50P35000	M	Wood screws	4	AC

PACKING



• **Not replaceable items.**

NOTES

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